JUL 13 1943

American Lumberman

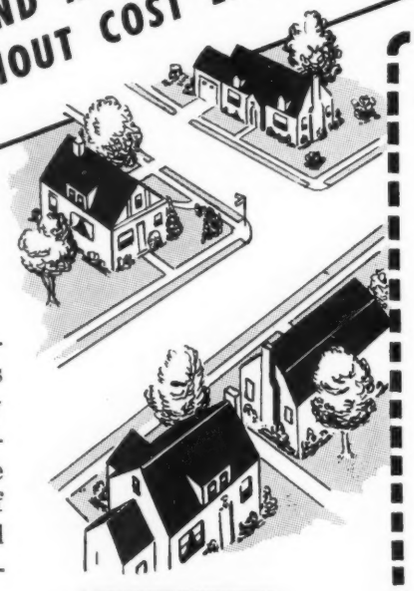
70TH ANNIVERSARY

REFERENCE NUMBER

July 10, 1943

CAREYSTONE *ASBESTOS-CEMENT* SHINGLES *and* SIDING

NOW AVAILABLE FOR NECESSARY REPAIRS AND MAINTENANCE WITHOUT COST LIMITATION



T'S a real break for home owners, and a double opportunity for you — this new Government order removing restrictions on use of asbestos shingles and siding for necessary repairs. We say "double" opportunity because you can now make *more profit* on larger sales of asbestos shingles and siding, and at the same time *help your Government and the war effort!* (Reasons for this new Government order are given at the right.)

Home after home in your community is in *vital need* of extensive repairs—repairs which were put off because of previous Government restrictions. Tell property owners about this new Government order, in your publicity and personal selling . . . it can help you get new business. For better service to this big new market, sell attractive, long-wearing, *fireproof* CAREYSTONE Asbestos-Cement Shingles and Siding.

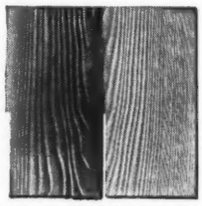
You can depend on CAREYSTONE to give permanent customer satisfaction — the kind that brings you *repeat business through the years.* For details, write Dept. 11 — NOW!

Here's Why...

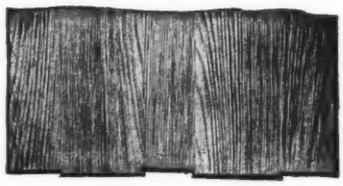
The Government has recently been threatened with a serious shortage of "long fibre" asbestos, needed for vital war products. Since long and short fibre asbestos cannot be mined separately, there has been an accumulation of unused short fibre—normally used in making asbestos shingles and siding.

To ease this situation and assure a continuous supply of long fibre asbestos, the War Production Board has now removed all limitations on the use of asbestos shingles and siding for needed home repairs. There is now no limit on the expenditure involved, so long as the repairs are actually needed for property maintenance.

When explaining this new Government order to customers and prospects, say to them: "In making needed repairs with asbestos shingles and siding now, you not only help yourself—you also help the Government directly in the war effort."



(Above) "Blended Twin" Shingle. Self-spacing and self-aligning.



Right, Careystone Siding. Available in thatch butt and wave line units, in random widths.

Careystone
ASBESTOS CEMENT
SHINGLES and SIDING

are *absolutely fireproof,* rot-proof, wear-proof, and vermin-proof. CAREYSTONE is durable in any weather, unaffected by cold, heat, or moisture. Beautifies homes and actually *improves* with age, becoming harder and tougher as the years roll by. CAREYSTONE cuts paint costs, too, since paint is not essential for its protection.

THE PHILIP CAREY MFG. COMPANY ● **Lockland, Cincinnati, Ohio**

In Canada: The Philip Carey Company, Ltd.
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Dependable Products Since 187

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70th ANNIVERSARY ISSUE

American Lumberman

The Management Magazine of the Lumber and Building Materials Field

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BY THE GUEST EDITOR

A number of years ago I accepted an invitation to spend a day with a prominent Indiana lumber dealer. As we walked down the street that morning from his home to the office he pointed out an attractive house and said to me, "I built that house." A little further on he indicated another home, "I got the contract to build that house as a result of the good job I did on the first one I pointed out to you." Still further on he pointed out another home that was of his construction and just then the housewife stepped out on her front porch, waved her hand and called a greeting to the lumberman. He returned her greeting and explained that he had just been telling me that he had built her home.

"I'm so glad you did," she said. "It's such a comfortable home. The longer we live here the better we like it."

What a joy that was to that lumberman. He had built those homes, but more than that he had built himself into the hearts of his fellow citizens.

Prospects for your business were never better than they are right now. More babies are crying for a home than in any of the years since America became the home land of the free. It will take a little patience, planning and perseverance, but the opportunity is knocking at your door. Your advice, your help will be needed.

You can have house plans, large and small, suitable for your community already figured as to the material each will take. You have a plat of your town with all the vacant lots shown—the names of their owners indicated—and you have been talking to your neighbors and friends about the home building program for the babies now in your town and those that will be born there in the next five years. You are gathering suggestions on how the town may be beautified and other material that will be used for these homes for happy fathers and mothers to be built by you—the building materials dealer. What a prospect!

No lumberman need ever apologize for his business if he is alive to the needs of his community and his country. He should give freely of his time and services for the up-building of his part of the nation that all true citizens love. The people of his town look to him for leadership. America is going to be rebuilt and he, in the building business, is going to be the key-man in that program.

The successful lumberman enjoys his work. Every achievement adds a new thrill. He takes pleasure in promoting new homes. He has a creative spirit. He will endeavor to keep his business on a solid, broad foundation—broad enough to let it expand outward and upward and take in his sons and the sons of other men. He will build it into a business that will continue long after the original founder has retired to enjoy a well-earned leisure. The lumber and home building business is a business that will not go out of style nor come to an end, if the captain at the top is the kind of man we have been talking to you about. It has the possibilities of a perpetual business.

The lumberman should often ask himself, "Am I measuring up to my opportunity and my responsibility?" He should be ever mindful of the fact that the fundamental principles of business do not change, but that the methods of approach and new ideas are changing. Old customers and new customers want new styles—new ways of giving expression to their manner of living. The real lumberman will meet the new things in the business with an open mind and a friendly attitude and without forgetting that good grades of good lumber well manufactured and honestly sold have brought him through to where he is now, and that that policy should be one of the cornerstones of his future prosperity and security.

Elmer C. Hole

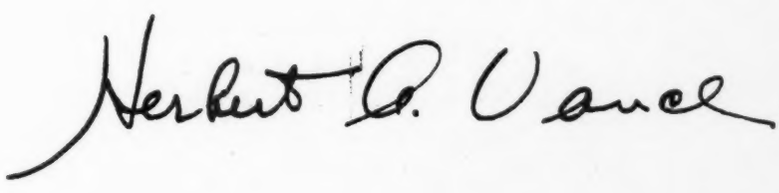
BY THE PUBLISHER

During the past seventy years the lumber and building materials industry has contributed notably and with distinction to the development of American social and economic standards. The American Lumberman has enjoyed a prominent role in that contribution. With the close of the war the industry will inherit an opportunity to serve the Nation even more brilliantly and more effectively than at any time in the past. We look forward with full confidence to the opportunities of the future, and to the abilities of the manufacturers of lumber and building materials to develop those opportunities.

The industry has learned a lot—enough, in fact, to be able to see clearly how much it has yet to learn. That is the mark of mature progress. Now, with both vigor and wisdom as its resources, it has a two-fold task before it. Immediately, it must continue to meet the needs of war; in the future it must meet the needs of adjustment to and advancement of peacetime living.

That is why, in the midst of the greatest war of all time, we decided that one of the real services we could perform was the publication of this issue—a complete and reassuring statement of the tremendous resources the industry has with which to fight its part of the war, and with which to take its place in the social and economic leadership of the future. That is why the editors and publishers of the American Lumberman are so confident about the future of this publication, and so enthusiastic about the opportunities that lie before it.

We stand realistically in the present, fully aware of the war, its impacts, the obligations it imposes, and the privileges of service it presents. We stand thus, but we peer also with equal realism into the future, confident of victory in the war and of our ability to contribute effectively to that victory; confident of what the future holds, and of the ability of the industry we serve to be among the most progressive factors in shaping an even better America than we have had.



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for

HIGH SPEED PRODUCTION

of

Quality and Quantity

STOCK MILLWORK

for **PEACE**

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AMMUNITION
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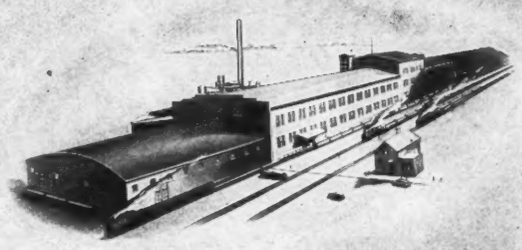


GEO. SILBERNAGEL & SONS Co

WAUSAU, WIS

"BEST INVESTMENT WE HAVE EVER MADE"

says the G. M. Stewart Lumber Co. about their Ross Series 70 Carrier

Here's praise which is typical—typical in that it reflects the opinions and experiences of scores of owners—and proof that the "70" can be an important factor in helping you meet today's demands . . . Our engineers and representatives will be glad to assist you in solving your handling problems. Write us today.

WHOLESALE and RETAIL LUMBER

G. M. STEWART LUMBER COMPANY

MINNEAPOLIS, MINNESOTA

May 26, 1943

Ross Carrier Company
Benton Harbor, Michigan

Gentlemen:

The Ross Carrier we have in operation has completely revolutionized the handling of lumber in our retail yard. During the last year we have handled a tremendous lot of lumber which has been furnished almost exclusively to the Defense Plants and projects in this area, and there is no doubt about the fact that this could not have been accomplished without the use of the Ross Carrier.

We have received much favorable comment from business people who have witnessed the operation of this carrier and without exception, we have been complimented for our good judgment and foresight in adopting this method of handling lumber. We feel that after the war, many more such carriers will be in use in this Twin City area as a result of the excellent performance of the machine we have in use at the present time.

We are very glad to recommend this Ross Carrier very highly, as our experience has proven this was the best investment we have ever made.

Thanking you for past favors, we remian,

Very truly yours,

G. M. STEWART LUMBER CO.

By A. F. Saxby- Secy. Treas.

ROSS CARRIER COMPANY

Factory: Benton Harbor, Michigan, U. S. A.

Seattle, Portland, San Francisco, New York City, Hoboken, N. J., Vancouver, B. C., Pine Bluff, Arkansas

The maintenance of the navigability of our streams in the east was the reason for the purchase of large areas of eastern National Forests. This shows well timbered slopes on Cold Mountain in the Pisgah National Forest near Asheville, N. C.

AMERICA'S ETERNAL WEALTH . . . . . .

An aerial view of magnificent stands of western hemlock and Sitka spruce, as found on Admiralty Island, along the shores of southeastern Alaska.

By NELSON C. BROWN, New York State College of Forestry

GROWING FORESTS

Since the first sawmills reported built at Jamestown, Virginia, in 1625 and at Berwick, Maine in 1631, the lumber industry has been intimately associated with the social and economic development of this nation. The industry has been an essential and important one and has contributed in manifold ways to the upbuilding of the American nation.

Beginning with the water-wheel as a source of power and continuing for about 200 years, the industry quickly shifted to steam in the early nineteenth century. Steam provided great impetus to the mechanical processes required in meeting the increasing demands for lumber. This proved to be necessary with the western expansion and development of the nation. As the people pushed westward over the Allegheny and Appalachian Mountains into the fertile regions of the Central West, and finally across the Rocky Mountains to the far West, enormous quantities of lumber were required, both for dwellings and farm buildings as well as for bridges, railroads, industrial structures and many associated activities.

The lumber industry was centered largely in Maine from the earliest settlements and for more than 200 years until 1850 when it shifted to New York. At Bangor, the cradle of the American lumber industry, were 20 or more sawmills along the Penobscot River from which lumber was shipped to many parts of the world. Albany became a great distributing center of lumber produced in the upper Hudson River valley. In 1850, about 8 billion b. f. were cut in New York and in 1869 that state produced 20 per cent of the entire country's lumber. In 1860, the industry was centered in Pennsylvania, and Williamsport with its thirty huge sawmills along the Susquehanna River became the center of the nation's

Block of virgin white pine left to seed up an area selectively logged in the Northeast.

Marking a hard maple for cutting on a timber sale on the White Mountain National Forest, New Hampshire.

lumber production. In 1870, and continuing to 1890, the industry was centered in the Lake States, where Saginaw became a great center of some fifty sawmills in and about that city. Magnificent white pine forests were purchased at $1.00 per acre and some of these acres contained from 10,000 to 40,000 b. f. or more of the best white pine the country has ever produced.

From Michigan, the industry spread to Wisconsin and then to Minnesota. Since 1895, southern pine has supplied from 20 to 40 percent of the total lumber cut of the country. The peak of southern pine as well as national production was reached in 1906. In 1900, Washington and Oregon began to assume importance in lumber production. The West, with its great Douglas fir, hemlock, redwood, cedar, spruce and pine forests quickly rose in lumber production until the peak in that region was reached in 1926. The lumber capital of the world is now at Longview, Washington where several huge lumber and other forest product industries are located.

The hardwood branch of the industry grew with the industrial development of the country and the center of hardwood production moved during the 19th century from New England westward through the Northern and North Central States, thence down the Mississippi Valley and along the Appalachian Mountains toward the South. Currently, Louisiana is the largest hardwood producing state.

Lumber production throughout the country rose rapidly after 1860 and reached maximum production of 46 billion b.f. in 1906. There were subsequent minor peaks in 1916 and 1926, representing periods of great industrial activity and prosperity. The low point in lumber production, since 1860, was reached in 1932 with about 11 billion b.f. Since then it has risen to about 32 billion b.f. per annum.

The lumber industry, until recently, has been in a continuous state of change, both in location and in species production. The only large remaining virgin timber stands are found in the far West. Most of the lumber produced in the north, northeast, and south is from second or frequently fourth and fifth growth timber. Less than 15 percent of the remaining southern forests are virgin. North Carolina, in spite of being cut over for more than 300 years has been producing lumber at an annual rate of about 1 billion to 1½ billion b.f. for the past 40 years. This state has more sawmills than any other in the nation.

The American people, because of the super-abundance of virgin timber existing in the early days of the nation, have become accustomed to demanding clear boards for many uses for which knotty boards would serve equally well. Prepossessed with the idea that "clear" wood signifies quality, many Americans appear to have lost the appreciation of the interest and beauty in the character markings of wood which are too often spoken of as "defects." Virgin forests, in Europe, were cut and utilized many centuries ago but the people still continue to use large quantities of lumber, practically all of which is knotty, for purposes for which Americans insist on clear wood.

Within recent years significant changes have taken place in the lumber industry. Among these may be summarized the following:

1. A greater interest in forestry, the development of "tree-farming" and the growing of future raw materials for sawmills. This is induced both by an interest in the general welfare of the nation, as well as by economic necessity.

2. Closer and better relations with the government and the public. Through the activities of prominent manufacturers' associations, both the Federal and State Governments, as well as the public at large have been taken into the confidence of the industry. This has resulted in mutual benefits and has had a very salutary influence on the industry, as well as the public esteem of the lumber business.

3. Better standardization of the lumber product in sizes, grades, and nomenclature to fit better the needs of the ultimate consumer and the structural requirements of industry.

4. A higher standard of business ethics in the handling, marketing and distribution of lumber—principally in the arbitration of disputes, the acceptance of responsible inspection, grade marking, and observance of stated or implied fair trade practices.

5. A desire for better technical knowledge of the physical, mechan-

ical, and chemical properties of wood as applied to the conversion, seasoning, grading, merchandizing and use of the product.

Distinctive Economic Features

The forest products industries—notably lumber—are distinguished by the following features which play an important part in the economic life of the nation:

1. They normally employ about 800,000 men. Including the various wholesale, retail and other distributing agencies, and necessary transportation, approximately one-tenth of our total population is dependent for a livelihood upon forests which, next to agriculture, is our most important resource.

2. Approximately 17 percent of the total capital of the country is invested in standing timber, logging equipment and railroads, sawmills, wood-working plants and other forest products industries, lumber stocks, retail yards, and accompanying services.

3. The transportation lines of the country, including rail and motor facilities, are to a considerable extent dependent upon the lumber and associated forest products industries. Lumber represents 60 percent of the carloadings in the Pacific Northwest. About 2 million carloads are annually loaded on the railroads with forest products. They are exceeded only by coal and ore as separate commodities carried by railroads.

4. The lumber industry is the oldest, most typical and continuous American industry, and for about 300 years has contributed more to the employment, housing and general welfare of our people than any other industry.

5. This nation produces more than one-half of the total lumber cut of the world. However, we normally export only from about 3 percent to 7 percent of our annual production.

6. The American lumber industry is more highly developed to produce a greater variety of sizes, species, and grades than in any other country of the world.

7. There are more than 600 separate species of trees found in the United States, of which about 60 are of commercial importance, and three including southern pine, Douglas fir, and ponderosa pine, comprise more than 70 percent of the total annual lumber production.

8. The principal specie cut for lumber is southern pine, but the West Coast since 1926 has produced the great bulk of the lumber cut. The principal remaining forests of standing timber are found in the West, particularly in Oregon, Washington, California, Idaho and Montana, in order of importance.

9. The great centers of lumber consumption are in the important centers of population. Lumber use is intimately related to population concentration and industrial activity. The states of New York, California, Illinois, Pennsylvania, Michigan and Ohio are the important centers of lumber consumption. The problems of distribution, transportation and competition are therefore highly complex.

10. Lumber is largely produced at great manufacturing plants requiring large investments of capital, and in individual mills cutting from 100,000 to 1,000,000 b.f. per day in two shifts. There are about 30,000 sawmills in the nation and the tendency toward larger aggregate production from the small sawmills cutting from 2,000 b.f. to 10,000 b.f. per day is increasing.

11. The logging and manufacture of lumber have been accompanied by tremendous losses of wood. Only a small percentage, estimated at 40 percent, of the wood content of trees cut is ultimately utilized. Abundant forests, relatively low stumpage values, oversupply of the so-called "offall" and high transportation costs, combined with public demand for the best grades have been largely responsible for this condition.

Advantages of Wood Construction

From the earliest historic times, wood has been the most economical and universally used construction material. The advantage of wood construction may be summarized as follows:

1. In proportion to its weight, wood is the strongest known material of wide use.

2. Wood is the most workable material and lends itself readily to manufacture into many shapes, sizes and designs.

3. Wood is an excellent nonconductor of heat, which is important in making dwellings warm in winter and cool in summer. The frame dwelling, properly built and

Virgin stand of yellow poplar, oak, maple and ash in the Southern Appalachians.

Stand of Southern Pine in Mississippi.

Virgin mixed hardwood and spruce stand in West Virginia.

Photographs by U. S. Forest Service and from files of American Lumberman.

Felling a southern pine with due regard to saving small trees.

Undercutting a twelve foot redwood in California.

A fine group of Douglas fir with some western hemlock, western red cedar and Sitka spruce found in the Pacific Northwest.

insulated, is the warmest type of home.

4. Its grain and appearance are generally attractive and render it susceptible to artistic and architectural designs — thus adding to the beauty and attractiveness of furniture, interior and exterior finish, panelling, flooring, etc.

5. Lumber is comparatively inexpensive as a construction material. This is doubtless the principal reason for its almost universal use for many structural purposes.

6. Wood is abundantly available in many shapes, sizes, and forms and is renewable as a resource. If proper forest management policies are pursued, ample supplies can be grown for the future.

7. With the use of timber connectors in wide spans and towers and in mill construction, fire insurance ratings are lower than for steel construction.

Lumber is a staple and well-known product of wide utility and demand and its principal advantages from the viewpoint of the banker, railroad, ocean shipping line, or those undertaking the risks of transportation, delivery and payment are as follows:

1. It does not deteriorate in value if properly handled and protected.

2. It is not readily affected by changing styles of the public.

3. It has a prompt re-sale value.

4. Heat, cold, or climatic changes do not seriously affect it.

5. Because of its weight and bulk, it is not easily stolen.

6. It can readily be insured at relatively low rates.

Saw Timber Resources

The total available supply of standing saw timber in the United States is 1,667,803 million b.f. About 79 percent of the saw timber, by volume, occurs in the western part of the United States, including the Rocky Mountains and the three Pacific Coast States, 12 percent is located in the Southern States from Texas to Virginia inclusive, and 9 percent is found in the other states, principally in the Northeast and in the three Lake States.

The percentages of the different species in our forests are as follows:

Douglas Fir	31.8
Western Pines	18.4
True Firs	7.9
Southern Pines	7.0
Western Hemlock	5.2
Spruces	3.7
Redwood	3.4
Other Western Softwoods	8.2
Hardwoods and Other Eastern Softwoods	14.4
	100.0

(Total footage: 1,667,803 million ft.)

The available stand of Douglas fir saw timber is about equal in volume to the total of all of the eastern and southern species combined. Therefore, it is likely that for future requirements, the nation must look more and more to the West for our virgin timber supplies and to the South where rapid regrowth and large areas will provide large quantities. According to U. S. Forest Service figures, there are 490 billion b.f. of Douglas fir and 225 billion b.f. of ponderosa pine available in the West in addition to large quantities of true firs, hemlock, redwood, spruce, and cedar. The total hardwoods available are 265 billion b.f. led by oak, red gum and the combined northern species of birch, beech, and maple. There are 277 billion b.f. of eastern softwoods including 197 billion b.f. of southern pine with spruce and fir next in importance, followed by white and red pine and hemlock.

With adequate protection from fire and other enemies, selective logging, rapid regrowth of forest lands and the reversion of agricultural lands to timber growth, it is believed that there will be sufficient resources available to maintain a satisfactory lumber supply in the future. Proper regrowth and efficient forest management of our present and prospective forested areas should be able to assure sufficient lumber for domestic requirements and a profitable export trade.

Private Timber in Small Holdings

The statistical position of timber ownership shows that private timberland owners possess about 80 percent of all the timberland in the country. Naturally, the larger lumber, pulp and paper and other wood-using concerns, own and operate vast timber holdings to pro-

tect their investment in sawmills and other processing plants and to assure a continuous flow of raw materials. However, it is true that privately owned forests are characterized by rather small, average sized ownership. For example, 40 percent of all the private timber area is in farm woodlands generally from 5 to 100 acres each in area; 40 percent is in ownerships not exceeding 5,000 acres; and the balance, or 20 percent is in ownerships of 5,000 acres or more. Thus, only one-fifth of the privately owned timberland is held in large ownerships, that is, 5,000 acres or more in size. Some companies own from 20,000 up to 200,000 acres or more each. Forests of large areas can be operated much more economically under a plan of forest management. Many of the largest and oldest lumber companies, notably in the South and Northeast, have been in existence for from 30 to 80 years or more, and many have been practicing a very satisfactory form of forestry on their holdings to insure a continuous yield of sawlogs to the sawmills depending upon them in perpetuity. Already, from two to six cuttings or more have been made on some of these properties.

Lumber Production by Important Species

For many years, southern pine has been the leading source of lumber production. Douglas fir has increased its production in 20 years from about 17 percent to 26 percent of the total lumber production of the country and stands next to southern pine. Ponderosa pine has advanced rapidly from about 5 percent in 1919 to 14 percent of the country's total production. These three species comprise more than 70 percent of the total lumber production. The principal species produced in the United States are as follows:

Softwoods	*Percent of Total*
Southern Pine	31.0
Douglas Fir	26.0
Ponderosa Pine	13.5
White Pine, northern and western white	4.0
Hemlock, eastern and western	2.7
Cypress	1.7
Spruce, eastern and western	1.4
Redwood	1.4
Sugar Pine	1.2
Cedar	1.1
White Fir	.4
Larch	.4
Lodgepole Pine	.2
Balsam Fir	.1
Total Softwoods	85.1
Hardwoods	
Oak	5.7
Maple	1.8
Gum	1.5
Poplar	1.1
Tupelo	1.1
Birch	.6
Chestnut	.3
Other Hardwoods	2.8
Total Hardwoods	14.9
Total Softwoods and Hardwoods	100.0

The South with its southern pine and hardwoods has been the leading source of lumber production from 1900 to 1925. Since 1926, the West with its Douglas fir, ponderosa pine, western white pine, redwood, sugar pine, hemlock, spruces and cedars assumed ascendancy in lumber production and has maintained that position ever since.

Lumber Production from National Forests

Although, locally, lumber production from the 177 million acres of National Forests may be of considerable competitive importance, the total sold is relatively small compared with the country's lumber output. For some years, the total amount cut has varied from about one billion b.f. to about 1½ billion b.f. valued at from $3,000,000 to $5,000,000 annually. Most of this timber is sold in the West where private holdings are intermingled with federal ownership in practically all the National Forest. Many of these timber sales are made to companies operating their own private holdings. Thus, some of the companies may observe efficient silvi-cultural practices in cutting National Forest timber and follow the same favorable long range policies on their own holdings adjacent to the federal cutting areas. In some cases, however, there is some difference between the cutting methods followed on National Forest land and those on adjoining private timber holdings.

A small amount of timber is given away by the U. S. Forest

Spruce and hemlock timber running 60,000 to 80,000 feet per acre in Washington.

A dense stand of western white pine in the Panhandle of northern Idaho. Stands of 40,000 to 70,000 feet per acre are found in this region.

Mature ponderosa pine with good reproduction.

Service to local ranchers and farmers. A large portion of the annual cut, however, is sold to large lumber companies.

Size of Sawmills in Relation to Production

About three percent of the number of sawmills produce 52 percent of the output of American lumber. Thus, it is evident that a very small percentage of the mills produce the preponderant share of lumber production. About 62 percent of the sawmills produce only 8 percent. Of the 42 largest mills in the United States, 15 are in Oregon, 14 in Washington, 7 in California, 3 in Idaho and 3 in Mississippi. These mills generally cut from 100,000 to 500,000 b.f. or more in a single shift per day. They each produce 50,000,000 b.f. or more per year.

As long as virgin timber remains available in the Pacific Northwest, the large sawmill will be the major source of production. However, in the South, the Northeast and the Lake States, the small mill is the principal source of lumber production. There has generally been a trend away from the large sawmill and an increase in importance of the small sawmill, both in number of mills and in total lumber production. Even in the Northwest, the small mill is becoming a factor in production.

With the western expansion of population and railroad construction following the Civil War and the development of farms and cities in the Central West came a large development of the lumber industry in Michigan, Wisconsin, and Minnesota in that order. By increasing the number of headsaws from one to as many as four and with added production facilities of band resaws and gang saws, the individual mill was expanded until the first large mill cutting, about 1,000,000 b.f. in one day with two shifts, was built in Bogalusa, Louisiana. Other large mills were quickly established in the South and notably in the Northwest.

With the cutting of the large, accessible timber tracts of the Lake States, the South, and the Pacific Coast states, and the increased dependence of the mills on scattered blocks of second and third growth timber, there has been a notable increase in the number and economic position of the small sawmill. Although a preponderance of lumber production still comes from large mills, there is a definite trend toward lumber production from sawmills cutting less than 10,000 b.f. per day. There are generally from 200 to 600 or more small sawmills in each of the well forested states of the Northeast, the Lake States and the South. Even on the West Coast second growth timber is being cut to a greater extent by small sawmills producing up to 20,000 b.f. per day. In New York, there are about 500 small mills cutting less than 10,000 b.f. per day. The small sawmill is destined to play a much more important part in the forestry program of the country. Taking its raw material from a nearby drainage basin or from distances up to 50 miles or more, it is generally the only means of converting local saw logs into lumber. It furnishes stable employment and provides lumber requirements for the neighboring region.

In some of the older settled states such as Maine and New York, it is estimated that the forests are growing more rapidly than they are being cut. In New York, probably more wood is destroyed by decay than is cut for lumber and other forest products.

Employment in the Lumber Industry

Employment in the manufacture of lumber is more important than in any other industry in Oregon, Washington, Arkansas, Mississippi, Florida, Louisiana, Idaho, Montana and New Mexico in order of importance. Thus, lumber production is the predominant industry in supplying present and prospective employment to large numbers of wage earners in those states. The manufacture of lumber constitutes an important part of the social and economic life in more than thirty states. In addition to the above named states, lumber manufacture is second in the number of wage earners among the industries in Arizona, Alabama, California, Kentucky, Texas, and Wyoming.

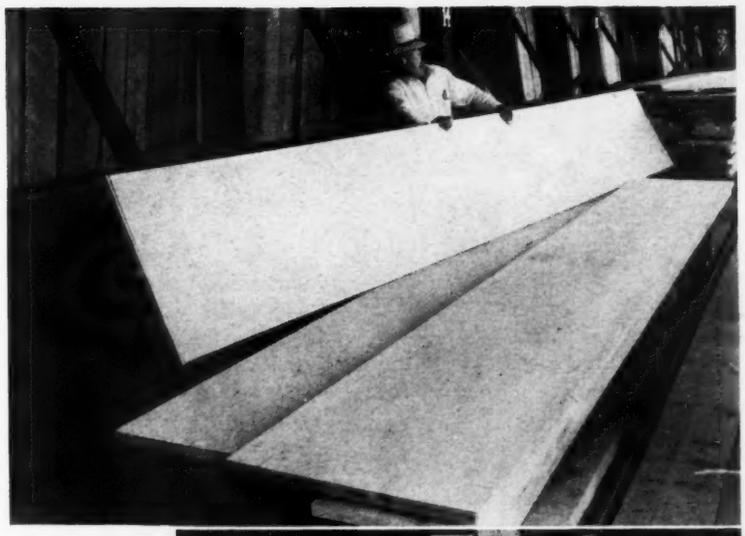
The average sawmill wage-earner was normally paid an average of 50.1c per hour. The wages are the highest and labor is doubtless the most efficient in the Douglas fir, ponderosa and other pine and redwood regions of the West. Labor is probably the least efficient and poorest paid in the southern pine and hardwood regions. The largest number of workers in the Douglas fir region earn from 70 cents to $1.10 per hour. During the World War beginning in 1939, much higher wages were paid. The general trend over the past twenty-

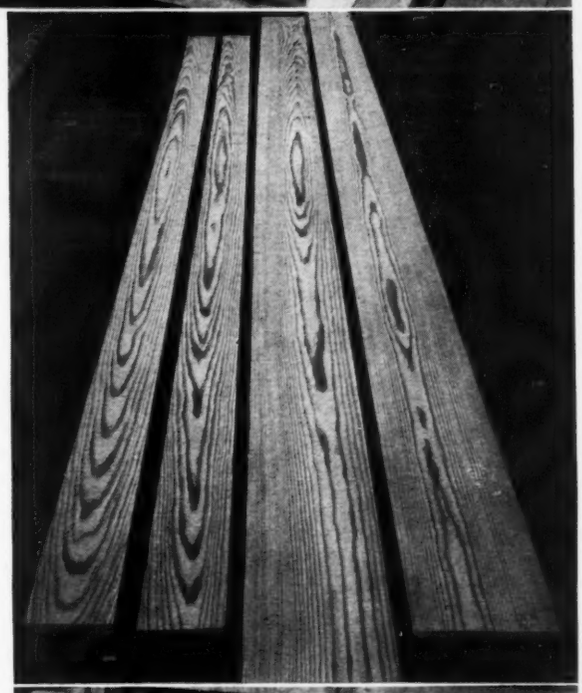
Western fir timbers.

five years has been definitely upward in hourly wages and downward in number of hours per week.

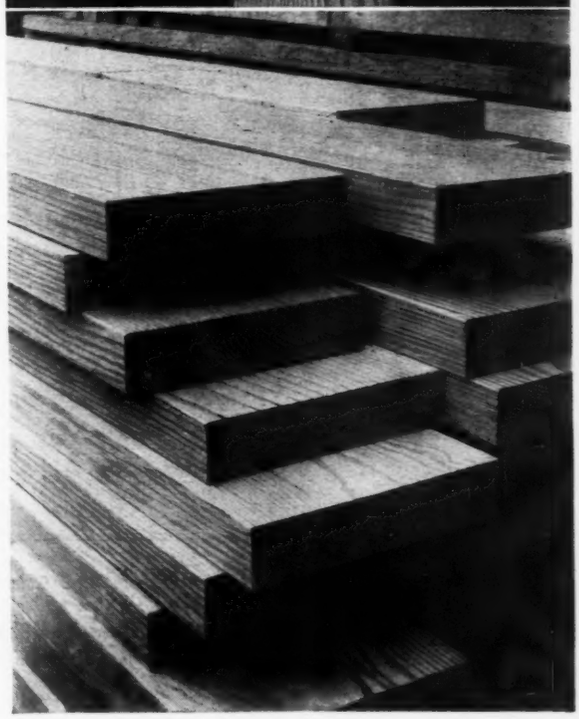
Man-Hours Required to Produce and Distribute Lumber

The following table shows the number of man-hours required to produce and distribute 1,000 b.f. of lumber in the principal producing regions. This table illustrates the fact that it requires about 1 man-day to log (8 to 10 hours per day) and 1 man-day to manufacture 1,000 b.f. of lumber under average conditions prevailing throughout the country. It also requires about one man-day to sell and transport 1,000 b.f. of lumber. The number of man-hours required to produce 1,000 b.f. of lumber is very much lower in the Douglas fir and western pine regions and conversely it is very much higher in the southern pine and hardwood regions. This table is based upon "Labor Requirements in Lumber Production" by B. H. Topkis, of the United States Bureau of Labor.





Top to bottom. California ponderosa pine. Southern pine from Mississippi. Western fir.



MAN-HOURS REQUIRED TO PRODUCE AND DISTRIBUTE LUMBER BY REGIONS

Operation	Average All Regions		Southern Pine Region		Western Pine Region	
	Timbers	Yard Lumber	Timbers	Yard Lumber	Timbers	Yard Lumber
All operations.	25.4	28.1	27.6	32.2	(1)	25.3
Logging	8.1	8.1	9.9	9.9	(1)	6.6
Manufacturing.	7.8	10.5	8.4	13.0	(1)	7.6
Selling and administration..	1.6	1.6	2.0	2.0	(1)	1.2
Transportation.	7.9	7.9	7.3	7.3	(1)	9.9
	Douglas Fir West Coast Hemlock and Cedar Region		Redwood Region		Southern Hardwood Region	
All operations.	19.9	22.1	(1)	32.2	33.9	36.0
Logging	4.9	4.9	(1)	7.8	13.6	13.6
Manufacturing.	4.3	6.5	(1)	13.8	14.2	16.3
Selling and administration..	1.0	1.0	(1)	2.0	2.0	2.0
Transportation.	9.7	9.7	(1)	8.6	4.1	4.1

(1) Relatively few timbers are produced in this region.

Stumpage Values in Relation To Retail Sales Prices

The value of standing timber or stumpage normally has been relatively low. Although lumber prices fluctuate rapidly with the market demand, stumpage prices change slowly and altogether have not advanced very materially over a period of 25 years or more.

The cost of lumber represents a considerable spread between stumpage prices and the final cost to the customer. A very large portion of the whole is represented in labor charges. The actual wood volume

Top to bottom. Permanent headquarters of a logging company, with forest in background which has been logged leaving all pine under 16 inches. General view along elevated alley from which lumber from the mill is placed in piles for air seasoning. General view of planing mill.

in a tree is worth relatively little. But the work of falling the tree, bucking it into log lengths, then skidding the logs to a landing and hauling the logs by truck or railroad to the sawmill and then through the operations of sawing, seasoning, planing and shipping the lumber to destination, requires much time and represents a very large investment of capital and labor, principally the latter.

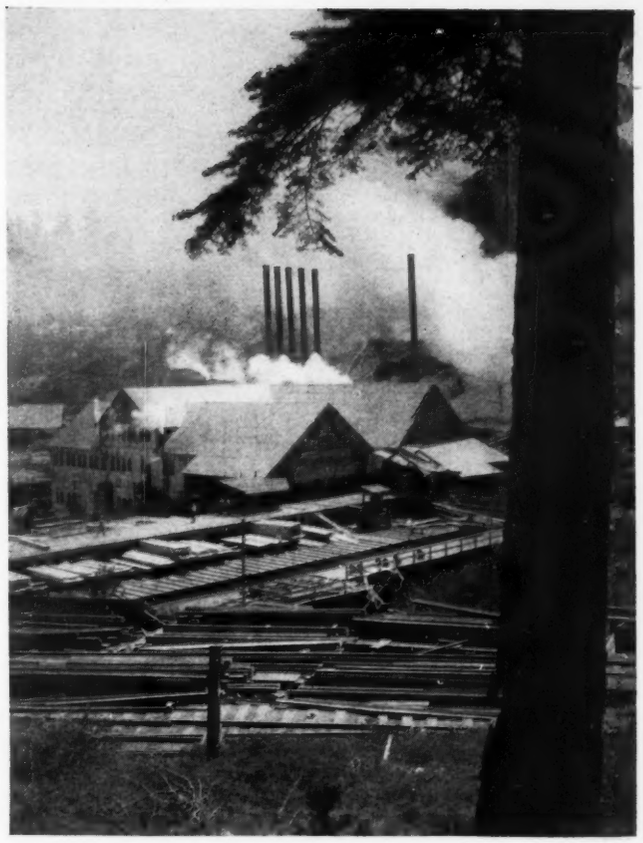
Stumpage generally represents from about 6 percent to 9 percent of the retail sales prices of lumber. Logging and lumber manufacture combined generally represent from 23 percent to 31 percent, and selling and administrative costs from 8 percent to 14 percent. Freight or the cost of transporting lumber from sawmills to the retail yards or wherever consumed is generally the largest single item. This represents from about 20 percent to 38 percent of the final cost. When lumber is hauled from the far South or far West to the great consuming markets of the Central West and Northeast by rail, there is obviously a considerable share of the total cost of lumber involved in the freight charges. Retailers' sales prices represent about 30 percent of the entire cost of lumber. The retail handling charges incident to the unloading of lumber and storing it in sheds or in the open, then trucking it to the home or industrial plant represent considerable labor and therefore high costs. The overhead charges on retail yards including insurance, taxes, interest and depreciation are considerable. Lumber is often stored for from two months to a year or more pending sale in the retail yards.

Thus, there is a great disparity between stumpage prices or the value of lumber as it is found in the standing timber and the final cost to the consumer. The actual cost of lumber manufacture is relatively low. The most important items are the transportation and distribution costs.

There is relatively little basis for some of the popular understanding that lumber prices have been high in this country. F.O.B. mill prices were as low in 1932 as they were several decades prior to that time. In times of great scarcity and strong demand, such as prevailed in the inflation period of 1920, lumber prices rose to the highest levels in history. These price levels, however, were not due to a timber shortage but to the fact that there

were very small stocks of dry and properly seasoned lumber to meet the demand prevailing at that time. The advance in lumber prices paralleled the inflationary rise in other raw materials.

The public often fails to appreciate that considerable time must elapse between the felling of trees, the transporting of logs, and their conversion into shapes and sizes that the market requires. Lumber requires from three to eight months or more for air seasoning depending upon the species, thickness and local drying conditions. The increasing costs represented in lumber values on our retail markets is to be directly attributed to the rising costs of labor which is the principal factor in the costs of producing a heavy and bulky commodity such as lumber in relation to its unit values.



A sawmill near the operations. The platform with the men on it is the green chain where the green sawed lumber comes out of the sawmill.

Relative Importance of of Principal Forest Products

For several centuries, lumber was the outstanding product of the forest. Fuel was also consumed in enormous quantities until coal, oil and electricity came into use in increasing quantities for heating and cooking purposes. During the past 50 years, there has been steadily increasing diversification in the utilization of standing timber. More than 4,000 separate items of use as applied to wood are on record. Both chemical and mechanical utilization has greatly expanded.

At the present time, lumber constitutes about one-half of the total produce in wood volume of our forests. Fuelwood is the next most important item constituting about 28 percent of the wood volume cut in our forests, followed in order of importance by hewed cross ties, 5 percent; fence posts, 4 percent; pulpwood, 4 percent, and the balance in order of importance, composed of mine timbers in the round, veneer logs, cooperage, both slack and tight, logs and bolts used for export and such products as handles, skis, baseball bats, gun stocks and other special products, shingles, poles, distillation wood, piling, tanning materials, excelsior bolts, and many others.

Price Controls and Competitive Influences

There are so many factors involved in pricing lumber and competition is so severe and complex that in spite of possible attempts, locally or regionally, in the past to control or stabilize prices, it has been practically impossible. There normally have been between 20,000 and 30,000 sawmills, largely of small productive capacity and widely scattered in location. During depressions or periods of low economic returns, many sawmills vanish from the business. On the other hand, during economic "booms" or periods of rising prices, many small mills resume production and sometimes go into two or three shifts per day. The large number of small mills going into production is often sufficient to disturb the normal balance between supply and demand with the result that prices eventually decline. Then, after an extended period of low returns and idle mills, prices may advance and the cycle is renewed.

Practically and literally, every one of the sawmills competes with each other. Moreover, hardwoods compete with softwoods. Lumber manufactured and sold locally competes with lumber transported from mills 1,000 to 3,000 miles away. These cross currents of competition between locally produced lumber and that shipped in from some distance is very severe. If one group of mills, producing one or a few species attempts to elevate and maintain the price structure at certain levels, the competition from other producing units tends to break down any attempts at monopolistic price controls.

Furthermore, the large sawmills generally receive from $1.00 to $3.00 or more per m.b.f. for their products than the small mills because of better available timber, more accurate manufacture, better seasoned condition, and more uniform quality. Also, the larger mills generally produce a much larger percentage of the higher grades in which the small mills cannot so easily compete. Relatively few of the total number of mills belong to the manufacturers' associations. These are generally the larger mills. The small mill owners usually produce for the local market or for concentration plants in the South and are not so much interested in cooperative effort with other sawmills to maintain favorable conditions in the industry, to produce uniform grades, advertise their products, and protect the

members against unfair or injurious legislation and trade practices.

Contributions to the American Economic and Social System

The leaders of the lumber industry have been, for about three centuries, among the leaders of thought and action in the development of the American commonwealth. From Maine to New York and Pennsylvania and to the Lake States and then to the South and Pacific Coast, the lumber industry has played no small part in the development of trade and transportation. It has been influential in the building of many stable and prosperous communities, in the expansion and development of railroads, in the construction of water and land highways, in giving employment to large numbers of people, and in providing inexpensive, plentiful and attractive forms of housing. It has furnished fuel for warmth and cooking; it has provided many articles of commerce in addition to lumber, including chemicals, paper, medicine, fibrous products, wallboards, and plastics which have contributed definitely to the happiness, prosperity, and general welfare of the American people. Translated into terms of work-days and the building and occupancy of homes, schools, churches, libraries, hospitals and industries, lumber has played a most important role in the social and economic life of the nation.

In addition to the direct employment in sawmills and logging operations, the lumber industry has contributed the basic source of employment in many phases of trade and transportation, including export commerce, railway, truck, and other forms of domestic transportation, banking, and the refabrication, finishing, and final use of materials. Thus, many artisans such as carpenters, painters, and workmen of many kinds in dwellings and structures and in industries using wood are vitally dependent upon this raw material as a source of livelihood. It is estimated that our forests, including the logging, manufacture, sale, transportation, and final use of its varied products provide support for from 8 percent to 10 percent of our people. It is estimated that at present, from 10 million to 12 million people derive all or part of their livelihood from the forests and the industries dependent upon them.

It is therefore important that these industries be continued on a prosperous basis not alone to provide an outlet for the sale and use of the products of a national plan of forest management but, still more importantly, to give steady and regular employment to large numbers of our people.

Top. Limbing up a big tree cut under a timber sale on the Coconino National Forest, Arizona. Bottom. Thirty-five million feet of white pine logs in a pond at Lewiston, Idaho.

Wood—The Most Important Raw Material of the Future

Because it is renewable and available at relatively low cost and has such a variety of structural, aesthetic, insulating and chemical properties, wood has been demonstrated and recognized as the most important raw material of the future, exceeding in importance the other basic raw materials such as the metals, oils, minerals, ceramic products, or others. From wood, which traditionally has been the source of materials of shelter and construction, one may secure paper and paper products, explosives, clothing, food, three kinds of fuel including the natural wood, charcoal, and wood gas, and hundreds of chemicals, medicinal preparations, and others important and useful in human economy.

Within recent years, wood has been conclusively demonstrated in Europe as the most important single basic raw material. There, many thousands of automobiles are operated on wood gas, some of them with a very satisfactory lubricating oil made from wood, much of the clothing, including wood cotton, wood wool and wood silk, is made from this material; various forms of domestic animal foods have been produced; compressed wood has replaced metal for gears, die-casts

and many purposes for which only metals heretofore have been considered useful. Various forms of plywood and laminated wood have replaced metal and ceramic materials.

For about 40 years after 1900, many substitutes have been introduced to replace wood. Within recent years, wood has come to be recognized for its superior qualities by the general public as well as by engineers, architects, and others determining the use of various materials. Wood has recaptured markets lost to substitute materials and is now replacing many metals, concrete, brick, and other basic products for purposes for which it has been demonstrated as a superior and more efficient material.

Winter logging camp in Minnesota.

Definition and Use Classifications

Definition

Lumber is the product of a log manufactured by sawing. It may be further manufactured by resawing or planing. A board foot is the quantity of lumber contained in, or derived from, by drying, planing or marking or by any combination of these means, a piece of rough green lumber, one inch thick, twelve inches wide and one foot long, or its equivalent volume in thicker, wider or longer lumber.

Classifications

In classifying lumber, there are three groups divided according to (1) use, (2) size, and (3) extent of manufacture.

(1) *Use Classifications.* Lumber is generally classified according to the three following principal uses. Separate grading rules may apply to each class.

1. Yard Lumber. This embraces the major quantity of lumber and includes those kinds used for general building purposes. Yard lumber consists principally of 2-inch dimension, timbers and inch boards used for siding, sheathing, underflooring, subroofing and miscellaneous purposes such as stepping, closets, shelving, interior trim, baseboards, etc. Yard lumber is graded on the basis of the intended use of the entire board for a given purpose rather than for further manufacture.

2. Factory and Shop Lumber. This is seldom carried in a retail yard. It is largely shipped from the sawmills directly to individual plants for further manufacture. It is graded on the basis of the percentage of clear cuttings. Practically all hardwoods are intended for further remanufacture and many of the pines and Douglas fir are cut in 1″ and 2″ thicknesses for remanufacture into doors, framing, sills, sash, furniture parts and other similar products.

3. Structural Lumber. This is lumber two inches or more in thickness and 4 or more inches wide intended for use where working stresses are important. The grading of structural lumber is based upon the strength and use of the entire piece as such.

(2) *Size Classifications.* The yard lumber as classified above is further subdivided according to (1) *strips* which are boards less than 2″ thick and less than 8″ wide; (2) *boards* less than 2″ thick and 8″ or more wide; (3) *dimension* which comprises lumber from 2″ up to but not including 5″ thick and of any width, and (4) *timbers* which are 5 or more inches in least dimension.

Structural lumber is further reclassified by size according to (1) dimension (which are sometimes known as joists and planks) consisting of lumber from 2″ to but not including 5″ thick, and 4″ or more wide; (2) timbers 5″ or more in least dimension. Timbers may be classified as beams and stringers 5″ x 8″ or larger, and posts and timbers which are square pieces 5″ x 5″ and larger and intended to carry longitudinal loads.

(3) *Manufacturing Classifications.* Lumber is also classified according to the extent to which it is manufactured, as follows: (1) rough lumber, undressed, as it comes from the headsaw; (2) surfaced lumber that has been dressed or planed by passing through a planer—it may be dressed one side, two sides, one edge, or a combination of sides and edges; (3) worked lumber that has been run through a matching machine or moulder to provide machined lumber for flooring; shiplapped lumber that is worked to provide a lapped joint along the edges, and patterned lumber that is shaped to a given pattern or mould such as mouldings.

For each standard nominal thickness there is a recognized minimum in the surfaced or finished thickness for each size classification. For example, inch lumber dressed one or two sides must be at least 25/32″ in thickness for the standard yard board. For the standard industrial board 13/16″ or 26/32″ dressed one or two sides is recognized as standard. Yard dimension of nominal 2″ thickness shall be dressed to 1⅝″, and for standard industrial dimension 1¾″ thick. This applies whether the dimension piece is dressed one or two sides. In width, dressing shall not take more than ⅜″ off lumber of a standard width of 3″, ½″ off for widths of 4″ to 7″ inclusive, and ¾″ for widths of 8″ to 12″.

Montage—top row, left to right: wood container cap; trainer plane fuselage of wood veneers bonded with synthetic resins, light as a feather; collapsible chair with plywood frame. Center row: built-up girder with plywood web; hinges of plastic-bonded plywood with hidden metal bearings; typical turned wood product; section through double-web truss built up of plywood and used for arched member. Bottom row: (left end) lumber impregnated with preservative, and (right end) untreated; remainder, left to right: covered and uncovered views of a plywood column; product molded from waste lignin; plywood fluorescent lighting trough. Montage and article from NEW PENCIL POINTS.

YES!

Ever since early man roamed the woods in leopard skins and bare feet, he has been using wood in the structural sense. He has fashioned boats for the sea, shaped bows and arrows, built huts of notched logs, and squared up joists and beams with the adze.

In the past two centuries he has built up a remarkably efficient, high speed, line-production saw-production saw-milling industry. Within the past three decades he has so refined the machinery of the sawmill and the planing mill that he can produce lumber with marvelous rapidity, accuracy, and economy. But still he has left the natural wood unchanged. He has merely cut his logs into smaller pieces, sawed them, and smoothed them. Through pure mechanics he has vastly extended the range of uses of wood as lumber. These structural uses of wood will still continue in heavy volume.

Then along came the plywood industry. The art of veneering—and that is basically what plywood manufacture is—is very old. Until the chemist came forth with new types of glue—synthetic resins that were quick setting, insoluble in water, and impervious to many things—plywood had to wait. Today chemists still stir the glue pot and evolve new wonders.

But the marriage of wood and glue has not been confined to plywood. We are now making 40-inch clear pine boards out of 16-inch logs. We are now making excellent quality, 8-foot long 2x4s out of 30-inch pieces of scrap. We are now building marvelously-strong, intricately-curved beams, 50 by 100 feet long, and as thick as the length of your arm, by gluing up 1-inch boards.

Roughly speaking, wood is divided about fifty-fifty between fiber and lignin, plus other constituents. When wood is cooked with chemical solutions the lignin and other constituents are dissolved and the fibers are set free. In America we are still discarding millions of gallons of dissolved lignin simply because we have not been able to develop commercial markets for the products we know exist in that waste, pulp mill liquor.

Along the newer path of fiber use we are interested in fiber as a semi-raw material. Here, with the fiber as a starting point, we dissolve it with assorted chemicals into a uniform mass that no longer has any resemblance either to wood or fiber. Then we take these solutions and extrude them through dies and bring forth entirely new products—although still made from lumber.

Another aspect of our after-the-war tree is in the field of materials of plastic flow. Research men have already done many astounding things by combining wood with other ingredients, and while still preserving the basic structure have turned out items that no piece of lumber could ever hope to attain, in shape or form.

We will do something to wood in the natural—stiff, rigid—and temporarily soften it so that we may bend and twist and mold it into many desired shapes that we may bring out commercially.

AFTER THE WAR THERE WILL BE WOOD

300 YEARS of

AMERICAN HOUSES

Through the years materials have shaped houses. Good design uses materials for their natural qualities. Wood should be wood, strong, tenuous, handsome. Brick should be brick, piled one on the other. Yes, transite should be transite. not wood: and linoleum should be linoleum, not tile. The high points of man's building were marked by the straightforward, unashamed use of materials, as in the early American. The decadent periods produced such falsities as wood siding grooved to imitate stone, and imitation half-timber applied to a balloon frame house. We hope that such signs of decadence that appeared before the war will disappear when America again gains the confidence and knowledge which production and technology should give her.

PHOTOS. Left upper. Bark-covered English wigwams built by the first settlers in Massachusetts, copying structural features from the Indians but adding fire places and catted chimneys after the English fashion. Left lower. Thatch-roofed wooden house built as soon as pit saws could be set up. Above. The "Governor's Fayre House" a frame dwelling with leaded glass windows, roof of handmade shingles and ample chimney. These photographs are of the restored Pioneer Village at Salem, Massachusetts.

The standardized handles by which the builder pulls houses from the shelf have so generalized the history of Colonial architecture that there seems a universal notion that these handles were characteristic of well defined types in colonial days. Houses of those days, however, cannot be classified into categories as to date, geographical location, materials or design characteristics. As Voltaire said, "All generalities are false including this one."

The gambrel roof, for instance, which is now used almost exclusively as a handle for the Dutch Colonial "style," was found through several centuries, used by men of all nationalities including the Swedes and the English, and in all the different colonies.

In the main, the available materials form the chief distinguishing characteristics of the local types. The methods and design, at any particular time, were very much standardized all through the years from 1613 to 1820 which, in architecture at least, constituted the colonial period. To the building material man this influence of materials on design is perhaps more potently interesting even than the effects of history and habits, though they are all so interwoven that tables and charts or indexes are impossible.

Early Shelter

Plymouth in 1621 was a far cry from the modern artist's conception of the first Thanksgiving. The log cabin that has been so romantically associated with the historic event was not thought of, in fact played no part in housing the colonists, until the Swedes settled in Delaware in 1635, bringing horizontal notched log construction with them.

A restoration of the pioneer's village of Salem gives us a picture of the first dwellings typical in this country. Here are the sod-roofed dugouts of vertical palisaded logs and the bark-covered wigwams. The palisaded construction was borrowed from the ordinary houses of medieval England, though here for warmth and stability they were built partway into an earth bank. The wigwams were copied from the Indians and were made of a framework of sapling poles driven into the ground and tied together at the top. At one end of the tunnel-like structure was the fireplace of stone but with a wooden chimney. At the other end was a plank door set into a timber frame. Over the framework was placed matting of woven rushes which were then covered shingle-fashion with sheets of bark.

Probably no materials used in these two early housing types were imported from the old country. Logs and saplings, reeds and bark, all came from the site. What lime was used in the chimneys was made by crushing oyster shells. Even the hinges on the doors were formed of projecting lugs, top and bottom, extensions of the oak plank, and which fit into holes bored into head and sill.

The immense amount of work in establishing and supporting a colony in a pristine world did not prevent the colonists from bettering their homes as soon as timbers could be hewn and boards sawn in the pit saws. The first houses of this better type were thatched roofed, the outside weatherboards nailed onto the frame, usually with no interior finish, the windows about a foot square covered with oiled paper and closed with wooden shutters, the chimneys still of wood filled with wattles and daubed with clay. The nails were the only imported materials and in a few years even those were made in the colony.

Earliest Permanent Houses

In 1627 the Dutch at New Amsterdam invited the English at Plymouth to engage in commerce and trade with them. The Pilgrims accordingly built a trading post at Aptucxet, a portage head which avoided the long trip around Cape Cod by sea. This building has been restored upon its original foundations and probably presents as close a picture of its appearance as arduous research could produce. The walls are of timber framing covered with boarding, the chimney massively built of brick with a simple capping and the roof of oak shingles. The roof is steep, over 50 degrees pitch, and the eaves low.

Fragments of glass found in the excavation showed the windows to be of diamond shaped glass, very thin, about 5½ inches high and 4½ inches wide each, set in lead cames, which are the divisions which form diamond paned windows. Also a narrow iron hinge was found, so it was evident that casement windows were used.

In 1633 the Plymouth colonists founded a trading post at Matianuck on the banks of the Connecticut river which would seem to be the first prefabricated house, in this country at least. Bradford wrote: "They having made a small frame of a house ready, and having a great new-barke, they stowed the frame in her hold, and bords to cover and finishe it, having nayles and all other provisions fitting for their use. . . . Coming to their place, they clapt up their house quickly, and landed their provissions, and left the companie appoynted, and sent the barke home."

The famous Fairbanks house at Dedham, Massachusetts, built in 1636, which is the oldest house in America, except for the adobe houses of the south and west. The central portion is the original, the gambrel-roofed wings being added later in the same century. The double-hung sash are not original.

The Early American House 1630-1700

After the vicissitudes of settling in a new world, the colonists set to work to build homes and, as humans will do, they built them as nearly like those to which they had been accustomed as they could. The fact of a new world meant no creative opportunity to them. Such differences as occurred between houses of their old world and new world homes were changes due to lack of materials or memory. In Plymouth at least, the heavy mortise-and-tenon frame structures, covered with clapboards, with steep roofs, overhanging second floors and small diamond paned casement windows, were derived directly from the very district of England, around Exsex, from which the majority of the Pilgrims came. And this same general style was prevalent all over New England.

It had been generally thought that the half timber house, with exposed brickwork, plastered, in the spaces between the heavy framing timbers, was first used in this country, but then covered with clapboard after a few rigorous winters had spalled off the plaster. This theory has been put in the discard as the few (40) houses now standing which were built in the six-

teen hundreds look as if they had all been originally covered with clapboard, and, as mentioned above, the district around Essex, the original home of the Pilgrims, who built the first New England homes, has numerous original clapboard houses. Also lime was scarce and wood plentiful. Bricks were made very early in this country, 1611 in Virginia, but in the north they were largely reserved for chimneys.

These old houses are very typical in plan. A small hallway, called a porch, forms the entrance and contains the stairway, very steep and narrow. To one side, or both, is the doorway to the one large room or two, never more, in which the whole life of the family takes place. Sometimes leanto's were placed on the rear of the house which produced the "salt-box" house with the rear roof sweeping low.

Many of these houses had overhangs at the second floor line which in modern times has become the "handle" for what purports to be "modern early American," as if there could truthfully be such a thing.

The Fairbanks house at Dedham, Mass., built in 1636, is the oldest house in America now standing, with the possible exception of the adobe houses of Florida and the west. This house has a gambrel roof which has erroneously become, again, the "handle" of the modern Dutch colonial, which style originally had many more sweeping gable roofs than gambrels. The sash now in the Fairbanks house are not the original casements.

Regarded as the best example of the early American house is the Parson Capen house at Topsfield, Massachusetts, built in 1683. Here

The Parson Capen house at Topsfield, Massachusetts, built about 1683, considered the most typical extant example of the early American, medieval on appearance, with steep roof, framed overhang with drops, central chimney, small casement windows with leaded sash, and plain unornamented doorway.

not only the second floor but the gable as well has an overhang, with ornamented "drops" which are the carved bottom ends of the corner posts. It should be noted that ornament, except for a flowering of the actual framework itself, was not used in these houses. Sometimes the edges of beams or posts were chamfered or moulded, these, with the carved drops, being the only straying from the purely practical which the busy settlers could allow themselves. Even the entrance door, which is always the first spot to be ornamented when people want to "dress up" their houses beyond the point of the rigidly practical, is devoid of any ornament whatsoever. Sometimes the slab door had a pattern of nail heads but these served to hold together the several thicknesses of plank and also to discourage the rampant Indian from hacking it down with his tomahawk.

Garrison Houses

The Indian menace produced another type called the "garrison house" which was a solid wood fort. The exterior appearance was not greatly different from the houses of the time, though generally the overhang was all around. The walls were built of solid heavy timber, dovetailed at the corners, about seven inches in thickness and with loopholes for muskets cut through. These, when not covered with clapboards had the appearance of log cabins though the timbers were dressed square. The roofs were light but the attic floor was covered with sand to hinder the spread of fire when the Indians shot flaming arrows. The puzzle of these houses is the overhang, which would seem to suggest the battlements through which ye hotte oyle was poured on the unwelcome visitor in those delightful days, but for the fact that here there were no openings through which to do the pouring.

Dutch Colonial 1630-1800

The thriftiness of the Dutch in the New World, exemplified by their buying Manhattan Island for the extravagant sum of 60 guilders, is also apparent in their homes which used native materials to the utmost and when completed were filled with head cheeses and produce until it seemed the very walls would bulge. The Dutchman did not restrict himself to any one material for his house. He often used many materials in the same building, the very satisfactory result being felicitous because of the naiveté and common sense which were used in the combination of the materials. Stone, brick, stucco, clapboards and shingles would all occur in the same building in utmost harmony.

Though dressed stone was frequently used the ordinary field stone, which was used by other colonists only for fences, was used with charming effect in the walls of the houses. The stone walls were usually very low, as were the eaves of the houses, and only rarely did the stone extend up into the gable end where, rather, shingles or clapboards were used, the reason for this being that the stone was thereby kept close enough to the ground so it could be easily pointed, as the rigorous winters were hard on the poor mortar of the times.

Although the early Dutch Colonial houses had low, sweeping roofs, the gambrel suggested itself to the Dutch as a means of gaining more storage space in the attic. Perhaps it was an ingenious method of beating around the bush when a tax was put upon houses higher than one story. The Dutch gambrel roof is much different from the gambrel roof used in other parts of the country,

as the top slope of these roofs is quite short and at an angle of about 25 degrees. The long slope is at an angle of 45 degrees and frequently curves up at the eaves, making a very graceful roof. In the gambrel roofs of the other colonies the first slope was quite steep and the upper slope was shallow (see picture of the Fairbanks house).

The sweep of the Dutch Colonial roof was sometimes projected out and the outer edge carried on columns, thereby making a porch. The porch, that great American institution, had therein its beginning.

Dutch Colonial house at Nordhoff, New Jersey. The wing is the original part, being built in the 18th century, while the main body was built after the turn of the century.

The batten type shutters with the cut-out patterns, the Dutch door and kaleidoscope colors were characteristics of the Dutch House which we, today, still remember.

The Georgian Period 1700-1820

The period after 1700, generally called the Georgian Period, was more concerned with the amenities of life than the previous period during which survival itself was of utmost importance. The houses of this 18th Century were distinguished mainly by superficial ornaments. The houses would have been just as livable stripped of their "architecture." That this ornament, borrowed from the Classics, should become a distinguishing characteristic of a style of architecture is regettable. It may be a style of artistic endeavor, but certainly architecture is not the same as ornament, and though ornament of a certain period, just as the structure of a certain period, may be very characteristic, it should be patent that architecture should be more concerned with structure than with ornament.

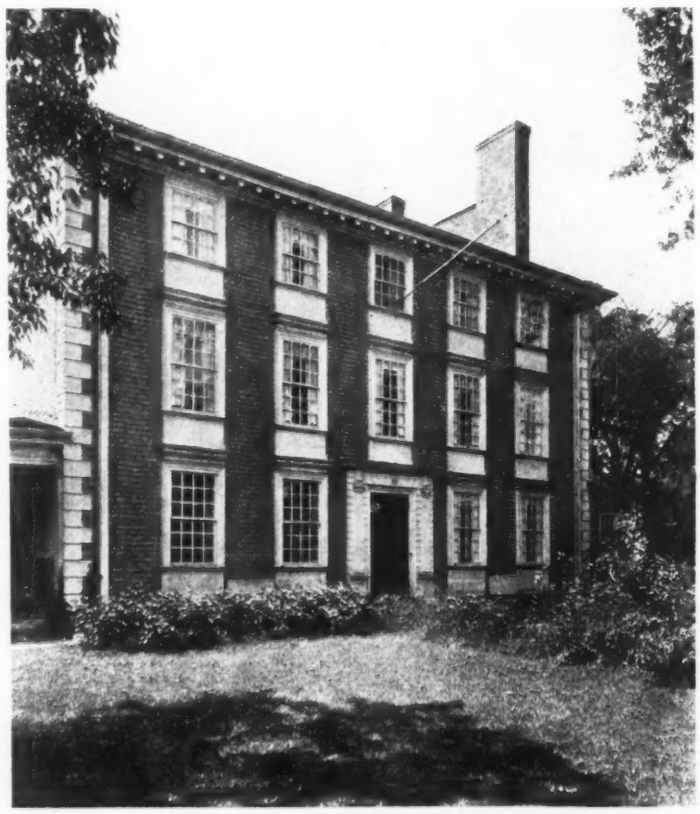
The buildings of the 18th Century had basic developments, of course. The structure, however, was merely a continuation, in a little finer scale, of the structure of the early American House. The covering or "skin" of these houses had lavished upon it the exquisite workmanship and infinite care that only a socially conscious generation could afford.

The greatest influence, therefore, was not the development of new materials, but rather the development of transportation and communications so that the modes and fashions of the time could travel all over the colonies and so materials and objects of art, crystal chandeliers, brass and wood carvings, wallpapers, paintings and all sorts of embellishments could be imported by our expanding ocean commerce. Imported, too, were the latest fashions from England which in turn were from the antiquities of Greece and Rome. These came over in the form of carpenters' handbooks, without which the carpenter-architect of the colonies would have been quite helpless. In fact, it is quite possible to trace the origin in the various handbooks of the elements of almost every Georgian doorway or cornice.

To be sure a great deal of originality was used in the adaptation of this material and in the working of the wood. But, artist though he was, the 18th Century housewright would have been helpless without Pain's "House Carpenter" or Benjamin's "Country Builder's Assistant."

In this Period the doors, windows, cornices, mantels, stairways and interior trim all were shown great care. Though the plan of the house developed and became more complex than that of the early American House it was merely by the addition of more rooms to the plan; convenience seemed to be more or less secondary to a dramatic stairway arrangement or a formal symmetrical balance in the walls of the rooms themselves.

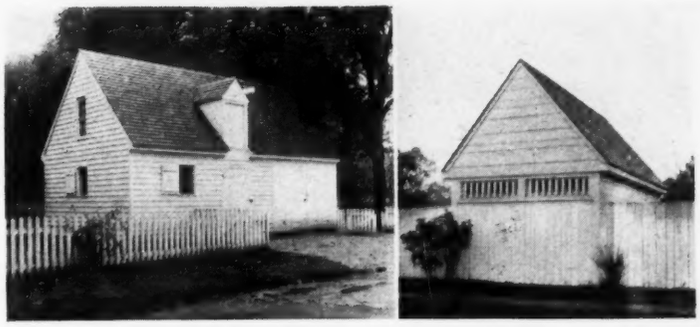
Materials were largely wood, particularly in New England, considerable brick, notably in Virginia and occasionally stone as in Pennsylvania. In general, as has been pointed out, the various features were to be found in any of the colonies



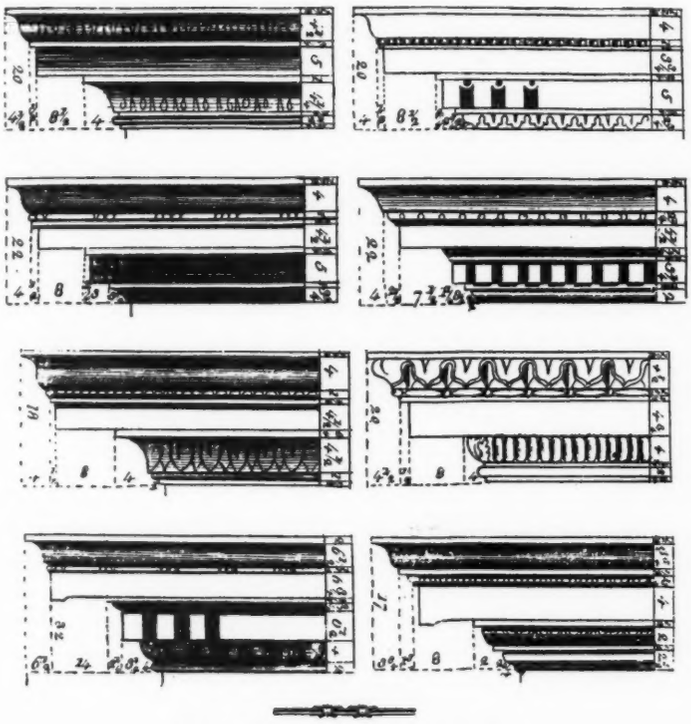
Early Georgian house in Medford, Massachusetts, built in 1732. Notice how stone shapes are imitated in wood.

though there were certain distinctive features which remained peculiar to certain localities. In Pennsylvania, for instance, was developed the Germantown hood, which is a narrow, continuous wood canopy across the front of the house, covering the window and door heads. In Virginia the chimneys were on the outside, as they usually were in this period, but were entirely free or separated from the wall of the house itself, above the second floor line. This was an expedient to prevent fires caused by leaking chimneys. In the South tall porticoes were enjoyed more generally as it was possible to use them as year-round porches. In general, however, these minor differences must be regarded as idiosyncrasies and the style itself merely a stage setting.

Most famous of the carpenter-architects was Samuel McIntire, who worked in Salem, Massachusetts, all his life. He was of a family of wood carvers and housewrights. The very fact that he left the structure of the house to his brothers while he busied himself carving the ornaments shows that he was a decorator rather than an architect, however skilled he was in the work that he did. His work was in the later phase of Georgian, which followed the vogue of the Brothers Adams in England, and his work extended from 1782 to 1810. He undoubtedly worked from the very plate taken from Pain's "Practical House Carpenter" which is reproduced here. It may be well to repeat that the very fact that his ornament was largely made up of "inspiration" from these documents and that the layout of the houses themselves was invariably symmetrical and rectangular would deprive him of the title of architect, which word is derived from the Greek "Master Builder."



Small service buildings of Williamsburg which attained a cleancut result because of their utilitarian nature and because they were not "dressed up" with meaningless ornament.



EXPLANATION OF PLATE LIV.

TO proportion the cornice and frize to rooms, or any place required ; give them three fourths of an inch to a foot, including the frize and necking ; ſuppoſe them to be fourteen feet, more or leſs ; at fourteen feet the cornice and frize, including the necking, will be 10½ inches ; divide that into 12 parts, give 5 to the cornice, 6 to the frize, and one to the necking ; if cornices are uſed without frize or necking, give them three eighths of an inch to a foot, or half an inch to a foot ; ſuppoſe 14 feet as before, at three eighths of an inch to a foot, the cornice will be 5¼ inches : at half an inch to the foot, the cornice will be 7 inches ; whatever the given height is, that muſt be divided into the ſame number of parts as the cornice you make uſe of, and diſpoſe them to the parts in height and projection, as figured on the cornices.

A plate from Pain's "Practical House Carpenter" showing cornice designs which the woodcarver could recombine and modify, giving directions for proportioning the various elements to each other and to the rooms or exterior entrance or cornice. Every carpenter who was worthy of the name had such a handbook, usually several, which he used assiduously.

As in many another period in architecture it is the utilitarian structure rather than the thoughtfully produced house that survives as a development inherent in the thoughts of the time. We show here a few of the outbuildings in restored Williamsburg, buildings originally built between 1700 and 1750 which served their purposes admirably and, though largely without decoration, they take their place as worthwhile citizens, unashamed, and certainly not bowing to the silk pantaloons and powdered wigs of the overly ornamented houses. In these simple buildings the structure and the natural shape of the mass, resulting from the construction, constitute the design elements. No architecture could wish for more.

The Greek Revival 1820-1860

One of the most fascinating periods in American Architecture, in American life for that matter, was the Greek Revival, that time when all new towns were named Athens, Attica, Carthage or Ionia, as if the very names could bring a semblance of Greek culture to the raw-boned villages. "The Greek Mania" as it was called even in those days, 1820 to 1860, was not satisfied to use elements from antiquity, adapting them to the materials in use, but were pleased only to use the exact proportions of the archeological drawings which had been published by Stuart & Revett, and even then they were not satisfied to use a column out of the book plus originality in the cornice, but must needs use the entire order. The ideal in architecture at that time was a building which followed the exact proportions of a Greek Temple, preferably with the columns all the way around as in the Parthenon. Expense usually precluded such indulgence but nevertheless what porticoes they could afford

A small house and a blacksmith's shop in Williamsburg. It is usually the small building, unostentatious, which succeeds as architecture.

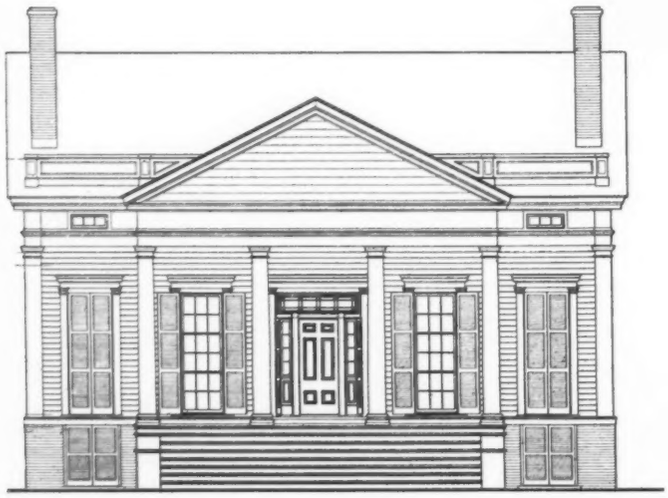
were done in an exact reproduction of the Greek proportion.

Even in those days it was evident to many that it was a preposterous assumption to make columns of wood in the Doric style, whose diameter was proportioned to one-sixth of the height. This proportion, so satisfying in marble, when laid up in drums, lost its whole meaning when translated literally into wood. It was a complete negation of the tenuous qualities of wood which had made the wood carvers of the preceding century so famous. These proportions of the original masterful stone architecture of Greece were not only translated into wood but also into brick covered with plaster, as in the columns of the Curtis House which gaze down over Washington from across the Potomac and are always a disappointment when a visitor approaches close enough to see they are not really stone, and into cast iron which was the new material of the day, just as plastics are now.

The Greek Revival style, then, was not occasioned by any inherent love of material, as in the case of the wood carvers of the Georgian period, nor was it occasioned by any social causes —there is certainly no verisimilitude in a "pure Greek" country bank visited by gamblers just off the river, stage coach drivers in from a run, farmers driving a few head of cattle into town, and a buck-skin clad hunter who leans his long rifle against the arris of a column while he takes a chaw of tobacco. The fact that some of the work was beautiful must be realized in entire separation from the problems of the time. There is a certain satisfaction in viewing a plaster cast of the Venus de Milo but certainly the cast is not the original work of art.

Therefore, the only excuse for an erudite architectural fashion to become the style of the rough and ready settlers of the Western Reserve, which was the section of the country then being settled, was one of "fad" which sometimes goes by the more polite name of "fashion." Try as we may we can find no other reason for it nor indeed could the architest or builder of that time. The balloon frame which was invented during the extent of this period made it easier to build houses. It did not make it any easier to build *Greek* houses. The balloon frame was the result of the practical minds of the settler, the Greek style the result of a cultural inferiority complex.

A Greek Revival house of brick in Galena, Illinois. The portico, which looks as if it should be stone, being in the exact proportions of the Greek stone architecture, is wood.



Elevation of the Widow Clark house in Chicago built in the 1840's. A good example of the Greek, executed in wood, built in a frontier town.

Jig-sawed ornaments on the eaves and around the door and porch were the first sign of the passing of the Greek Revival. The porch posts became thin, sometimes half-turned on a lathe and the horizontal lines of the Greek architecture disappeared so the dominant lines were vertical. Vertical batten boards, steeper roofs with pointed gables, slender tall chimneys, narrow windows, sometimes with pointed tops, appeared one by

one until the accepted architecture became what is known colloquially as "Steamboat Gothic."

The Iron Age

Coeval with the Greek Revival was the inception and development of cast iron as a building material. It could be given any desired shape and, once the pattern was made, could be reproduced in any quantity. Designs for railings, columns, brackets, stairs and beams were repeated ad infinitum, and could be had in any part of the country.

Though in larger buildings and bridges the use of cast iron as a structural material had become common, its use in houses was reserved for more or less decorative purposes only. Slender cast iron porch columns, sometimes two and even three stories high, and cast lintels, to imitate stone and decorated with Greek motifs, were about the only structural uses to which the new material was put. Nevertheless the versatility and delicacy of the cast iron ornament of the day makes it very important as a material characteristic of the era. It was indeed the mark of modernity in the first half of the last century.

In 1856 one James Bogardus, inventor and erector of a system of commercial construction, using iron columns in place of masonry on the outside walls, published a design for a house. An illustration, reproduced here, was intended to demonstrate the stability of the structure even though many of the supporting columns were removed. Actually, however, he built no houses, though he says in a booklet on cast iron buildings that had his necessities required him to construct a dwelling house rather than a factory his method would be as popular for this purpose as it was for stores. However, as far as the house is concerned, the use of iron or steel was practically unheard of structurally, until the turn of the 20th Century. In 1907 the Lally column was invented and within the next few years began to be used as basement columns in houses in conjunction with wood or steel beams. Even this was a far cry from the cast iron outer wall frame as suggested by Bogardus.

The Balloon Frame

The old heavy and tedious methods of constructing a house followed the settlers inland. You will remember that it consisted of a heavy sill of wood into which were mortised posts, heavy ones at the four corners and on each side of the window and door openings, all running to the height of the first story where they were joined by a horizontal timber called a "girt." Wall spaces were also filled in with somewhat lighter timbers, some running diagonally for bracing. Heavy beams constituted the floor structure and for a second story the process was repeated. All floor beams and rafters rested in slots cut into the side of the girt. All the framing members were heavy, were mortised, tenoned and spiked or pegged together and all the lumber was adzed or sawn by hand. For new settlements and growing cities this method was wasteful of energy and time.

"Balloon Construction" just had to be born, and born it was as the joint idea of George W. Snow and necessity, both of Chicago, in July, 1833. There were two small sawmills on the north branch of the Chicago River, and sawed lumber came from Michigan by boat. Equally important with adequate sawmills and lumber in the invention of the balloom frame was the mass production of nails, which had begun

Drawing showing the exquisite detail in a cast iron balcony railing, made in the 1840's, that material then being as modern as chromium plate is today.

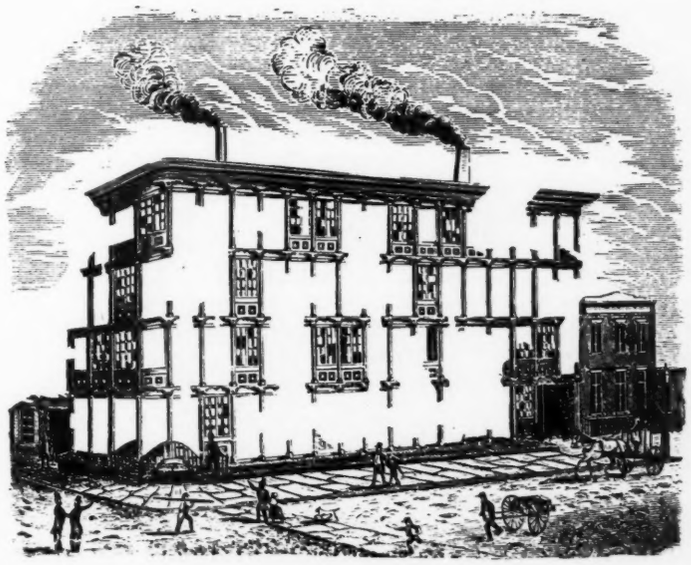


Illustration used by James Bogardus in 1856 for his booklet showing the possibilities of self-supporting iron frame construction for a home. Though he built many commercial buildings using this type of construction it is believed that he built no homes.

From Space, Time and Architecture, by Siegfried Giedion. Harvard University Press.

around 1800. For, while the old system of framing needed no nails—the new system depended entirely upon nails to hold it together.

Without the balloon frame the Conquest of the West would have been impossible, cities could not have sprung up with such rapidity. Despite its great influence on American history the balloon frame, frequently called "Chicago Construction," had to withstand the attacks of shortsighted people who were steeped in their own traditions just as modern architecture today is withstanding and winning over similar bitter attacks from those who can see "Home" only in the misguided modern attempts at "Colonial" which has been dead these 150 years.

To jump ahead to 1865, by which time balloon framing had become generally accepted we quote from "Woodward's Country Homes": "The balloon frame has passed through and survived the theory, ridicule and abuse of all who have seen fit to attack it. Its name was given in contempt by those old fogey mechanics who had been brought up to rob a stick of timber of all its strength and durability by cutting it full of mortises, tenons and augur holes, and then supposing it to be stronger than a far lighter stick differently applied, and with all its capabilities unimpaired. The name of 'basket frame' would convey a better impression, but the name 'balloon' has long ago outlived the derision which suggested it.

"A man and a boy can now (1865) obtain the same results, with ease, that 20 men could on an old-fashioned frame. The principal of balloon framing is a true one for strength, as well as for economy. If a mechanic is employed, the balloon frame can be put up for 40 per cent less money than the mortise and tenon frame.

The balloon frame is the one great turning point in domestic architecture and is the beginning of the manufactured house. By its very nature house building became an industry rather than a craft and could, if some sentimentalists would just allow it, transform the house from a box into a free and light structure in which subdivision of useful space transcends the rigid rectangle of the present day plan.

Spanish and Creole Architecture

Paralleling the development of architecture in the east and middle west, was the Spanish of California and the Creole of New Orleans, the first distinguished by the adobe construction, the second by wrought and cast iron balconies. The adobe houses were built of thick walls of adobe, which is earth pressed into molds, removed and allowed to dry in the sun. In a climate which seldom went down to freezing, this infinitely plentiful material could have no rival in those times of difficult transportation. The roofs were shallow, frequently of half-round tile, the windows few and small with deep reveals on account of the yard-thick walls. The cantilevered second story balcony of wood, used in those days as a second floor hall, has become now the "handle" of the Monterey style. In later years when commercial interests took over the Spanish adobe style they married it to the Churrigeresque which was a style originally coming from Spain which used ornate curvilinear ornament around window or door in the center of a plain plaster or stone surface. Originally this style in California was reserved for churches, while the houses were left very plain though indeed charming in their use of natural materials. These houses of early California are perhaps as successful as any indigenous American architecture. Certainly they are more successful than those which used Roman or Greek ornament to cover up a lack of structural imagination.

An adobe house near San Juan Bautista Mission in California. Simple and charming, built with the native materials and without ostentation

This adobe style, in slightly different form, is seen in New Mexico where it had been used by the Navajo Indians, and in Texas.

The typical Creole House is built right on the street, has second and sometimes third story balconies projecting out over the sidewalks, and is built around an interior courtyard, which always gives beautiful vistas, and shady seclusion from the life of the city going on about.

Downing in the 1850's

In the middle of the last century a notable book by a man named Downing made him the taste arbiter as far as the home was concerned. His book gives interesting insights into the construction and materials of the times. He published original plans and designs for cottages, villas and country seats and stated that the three materials in most common use were wood, brick and stone. He furthered the general vogue for vertical boarding and battens for modest houses. Here the influence of the material on the appearance of the house may be summed up in his own comments.

"We greatly prefer the vertical to the horizontal boarding, not only because it is more durable, but because it has an expression of strength and truthfulness which the other has not. The main timbers which enter into the frame of a wooden house and support the structure are vertical, and hence, the vertical boarding properly signifies to the eye a wooden house; in the same manner the main weight of a stone or brick house is supported by walls laid in courses, and hence the truthfulness of showing horizontal

courses in brick or stone buildings. It is as incorrect, so far as regards truthfulness of construction, to show horizontal lines on the weather boarding of a wooden house, as it would be to mark vertical lines on the outside of a brick or stuccoed wall."

In describing a particular house Downing says that to promote economy rough or unplaned boards could be used, but that steam-planed boards and planks were offered so cheaply ($3.00 a thousand feet additional over the $14.00 base price), being at the same time matched or tongued and grooved, so better to keep out the weather, that they were then almost universally used for covering houses with vertical boards.

At that time, 1851, in New England and other parts of the country where lumber was cheaper than bricks a wooden house was made tighter by double thickness of boards on the outside of the studs. A lining of rough boards was first nailed upon the outside of the frame so as to form a plain surface and the weather boarding or siding, which formed the outside finish of the house, was nailed upon the rough siding. This

The last dying gasp of the Greek revival. A house of the 1850's in Paducah, Kentucky, with the full two story porch of cast iron, the heavy, bracketed wood cornice, and the tall narrow windows of the beginning of the Victorian era

sounds very similar to our construction today, except we must remember that the frame was still a timber frame using heavy sills and comparatively large studs, all mortised and tenoned together into a heavy framework. The balloon frame of Chicago had not yet attained general acceptance in the east, though that came very quickly.

In the better houses, using the double boarding, a coat of plaster was applied upon the inside of the rough board, which we now call sheathing. This rough board held the plaster reasonably well and since the edges were not planed or matched the joints formed a very satisfactory key. This coat of plaster may be regarded as taking the place of our present building paper which we put between the two thicknesses of wood.

The inside wall of the house was lathed and plastered, using split wood lath, of course, so the hollow air space was present just as it is in present day frame construction.

An improvement on this method of constructing a frame wall was more generally used in the Middle States and was called "filling-in." In this method the space between the studs was filled with cheap brick, sometimes even unburned brick, so to form a secondary wall between the outside sheathing and the interior plaster. In cottages and cheap houses the brick were placed on edge and flush with the inside of the timbers, leaving a hollow space between the weather boarding and the brick wall of several inches, and which enabled the plasterer to dispense with the lathing as he could then plaster directly on the brick. Of course this made cracks when the heavy studs shrank but the niceties of construction were not so rigidly regarded in those days.

The use of brick, even unburned brick, for exterior walls was frequent though it was suggested that the latter be painted or stuccoed and that the roof project at least two feet on all sides to prevent any vertical rain from washing away the walls.

A further interesting caution of those days was "never use cement or hydraulic lime, the character of which for tenacity has not been fully tested in outside walls for ten years at least. Several of our most popular hydraulic limes are excellent for covered work such as cisterns, aqueducts, etc., but nearly worthless for work exposed to the atmosphere. The only one which we know of to be an exception to this remark (this was in 1851) is the cement from Berlin, Connecticut, though there are doubtless others as good in various localities." Even though cement, which they called hydraulic lime, was in its infancy, certain of its characteristics were recognized, as it was recommended that it be used in the laying of the foundations of stone houses to prevent dampness from entering the stone walls above by capillary attraction. A further remedy to this damp condition which seemed to prevail in stone houses at that time was to "firr-off a hollow space between the stone wall and the plaster wall."

Nine-tenths of the roofs of country houses at that time were covered with wood shingles, sometimes cut in various shapes on the butt end. Gutters and valleys were of metal, frequently of lead, though copper, which was more expensive, was sometimes used and galvanized iron was being used increasingly.

Sheet iron for decks had been in use for some time though painting had been necessary, as galvanized iron roofing was not introduced until about 1850. Charcoal tin, called "Ternplate," was used for decks and later pressed metallic individual shingles were introduced. These came in many different shapes, pointed, rounded and scalloped, in the same spirit as the slate or wood shingle roof of the period in which patterns were introduced into the roof areas.

Mid-Victorian

The romantic derivations of the houses of those times, 1850 to 1880, are apparent in the old engravings in Godey's Ladies Books and in the old carpenters' and builders' handbooks of the times. The various prototypes, the Gothic Villa,

the pointed Castle, the Swiss Chalet, the Italian Villa, the Norman cottage, as well as homes in the Classic, the Venetian, and the Indian, are shown as exemplary. It seems that even in those times any attempt at a purely American architecture was regarded as provincial and below the aspirations of a growing country which still had rather an inferiority complex as far as European culture was concerned. It is certainly a loss to architecture that the strictly American invention of the balloon frame did not produce at that time a more logical use of that frame than to adapt it to a pointed Gothic building. The architectural philosophy as to the natural uses of materials, which we have pointed out above in the example about vertical boarding, was all right as far as it went, but it stopped with the uses of the materials themselves, and did not continue into the design of the building as a whole.

Villa in the oriental style, published in Godey's Lady's Book, January 1861. The description states that it is "differing entirely in the design and arrangement of plan from anything that has preceded it, presenting a degree of novelty that is at once pleasing and attractive. The style being well adapted to that of a southern climate, for which it is intended, being now in progress of erection at Natchez, Mississippi." Today the house is still uncompleted as work was stopped abruptly at the time of the Civil War, and never resumed.

In 1873 an Englishman, Charles Locke Eastlake, published a book which was reprinted widely and read by every one who pretended to any culture at all. He advocated, also, the natural and unaffected use of materials, and published designs not only of houses but also of the furnishings of the houses even down to wallpaper and knives and forks. To have a house in the "pure Eastlake style" was the epitome of elegance. The work was rectilinear, with many chamfers and incised lines. It had a clumsy feeling that did not demonstrate its supposed sympathy to materials. The theory was good, the execution left much to be desired as even some writers of the time realized.

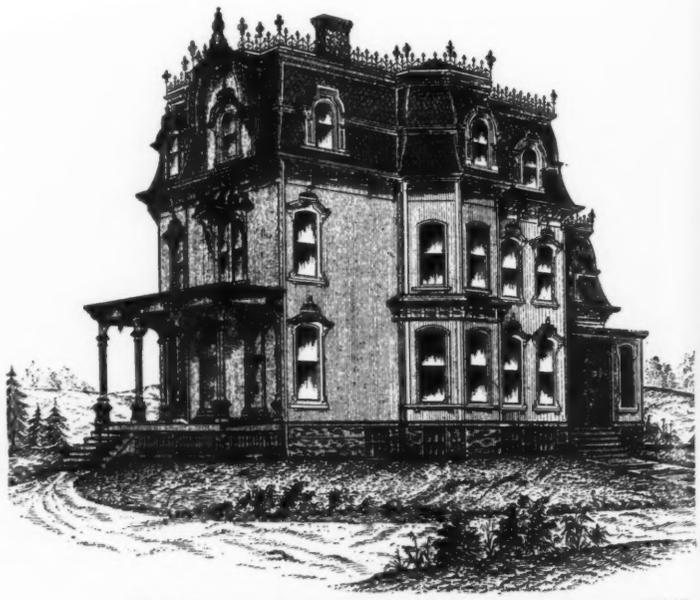
The year 1851 had marked the beginning of the decadent architecture which accompanied the industrial expansion of the nation and lasted for about 30 years, longer if we consider only the small house, as the indigenous American architecture which arose in the '80s from the work of H. H. Richardson of Boston was restricted to very expensive homes and monumental buildings.

Construction in the 80's

Popular though the balloon frame was, there were still many adversaries as late as 1879 who insisted that a mortised and pegged wood frame was the only way to build a house. For the house of ordinary size they recommended 4x7″ sills, 3x7″ floor beams, 4x7″ posts at the corners and on each side of the openings, and 4x8″ girts connecting the tops of the posts. The wall space was then to be filled in with 2x4″ wall strips. One particular house required four hundred 13 foot strips (this was the standard length then) at 11 cents each, which made a total of $44.00 for all the strips required.

This same adviser described placing building felt from strip to strip, a distance of 14 inches, half way between the exterior siding and the interior plaster, thus to form a double air space. People were "insulation conscious" but as yet the use of a wall fill was not in general use except for the occasional use of sawdust as an insulating filler. Sawdust had of course the disadvantages of harboring vermin and rot and of combustibility.

Even in colonial times rushes were sometimes laid over the beams of the first and second floors



This house was the height of fashion in 1873, the year AMERICAN LUMBERMAN was founded. Heavy ornament, high mansard roof in what was thought to be the style of the Third Empire of France

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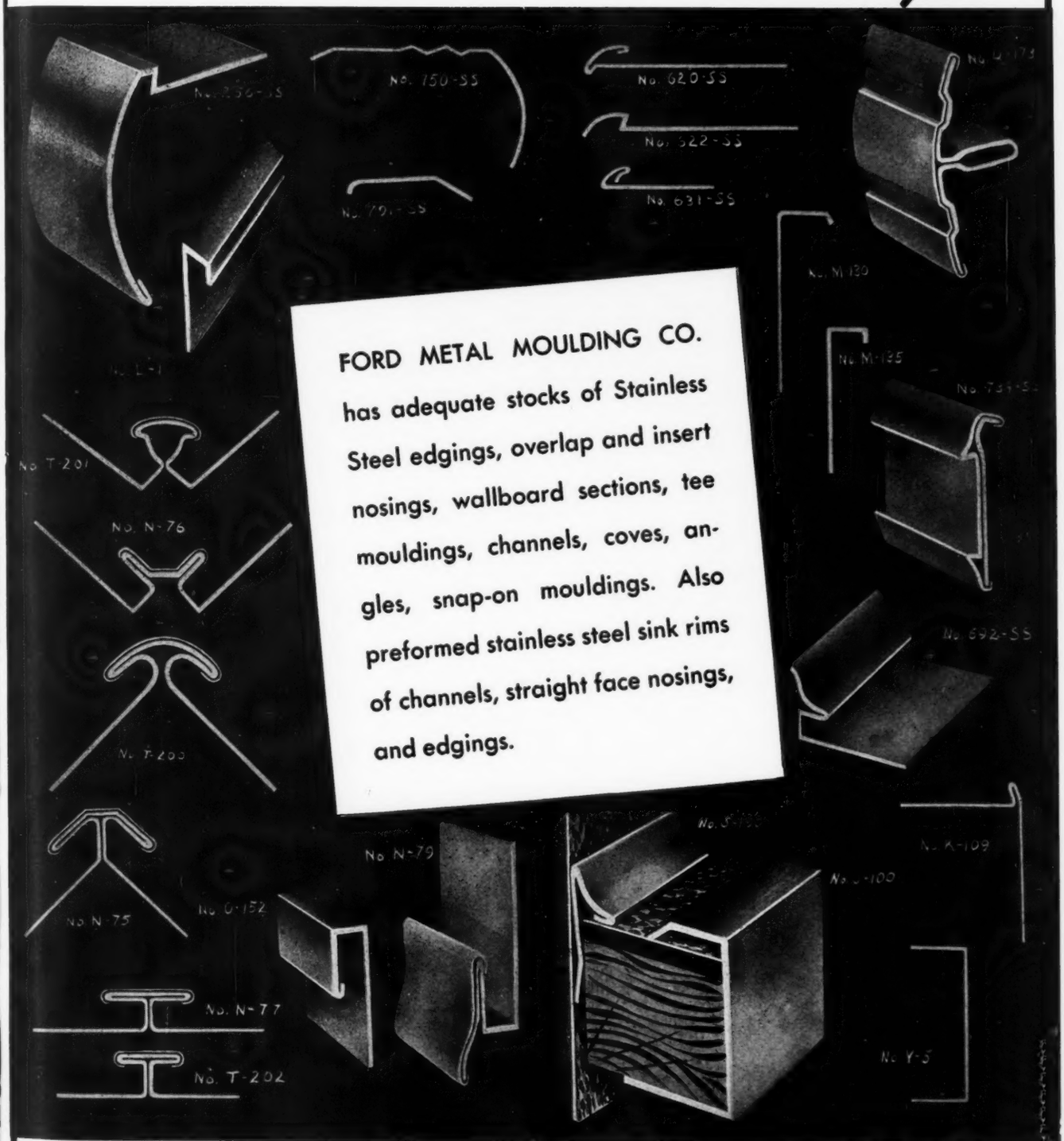

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before the floor boards were put down. Sometimes these were used for insulation alone and sometimes they were used as laths for plastering as well. The general use of insulating material, however, is a comparatively new one, in fact it is only within the last ten years or so that the small house was insulated as an accepted practice. Insulating blankets have for some time been made of seaweed or the stalks of flax. The rigid board insulations may be said practically to date from the early 1920s though of course many wallboards have been on the market as interior finishes before that.

Cheap Construction in 1887

A system of construction going the balloon frame several steps further was advocated in 1887, and was called "Plank Framing." The floor platform was built in the usual manner of light members, 1¼ inches thick, and floored over. Temporary supports were then erected and the frame for the ceiling or attic floor, as the case might be, was erected, suspended on this temporary support. When this was finished 1" boards were nailed vertically from one platform to another to act as the supporting and enclosing member in one swoop. The recommendation of this type of construction cautioned against using this type of construction in other than the least expensive buildings. Wisely, too, we think.

The use of plasterboard for walls and ceilings makes a very interesting quotation. It is well to note that the term plasterboard as used then did not mean a board of plaster or gypsum, but rather a paper board which was to be used in place of plaster. The description reads: "This is a very strong manila paper and is pasted or cemented (not packed) on to common plastering lath, which should be planed on one side to insure a smooth surface. But half the number of laths required for plaster are necessary. Unskilled labor can apply it. It is justly claimed for this finish that the expense is light as compared with plaster (just the point for us); and there is no cracking; that it is impervious to dampness; that it is warmer in winter and cooler in summer than plaster; that it does not shrink and is easily repaired; that it can be applied at any season of the year. Its color is salmon and its natural appearance is good; wallpaper can be applied to it the same as to plastered walls.

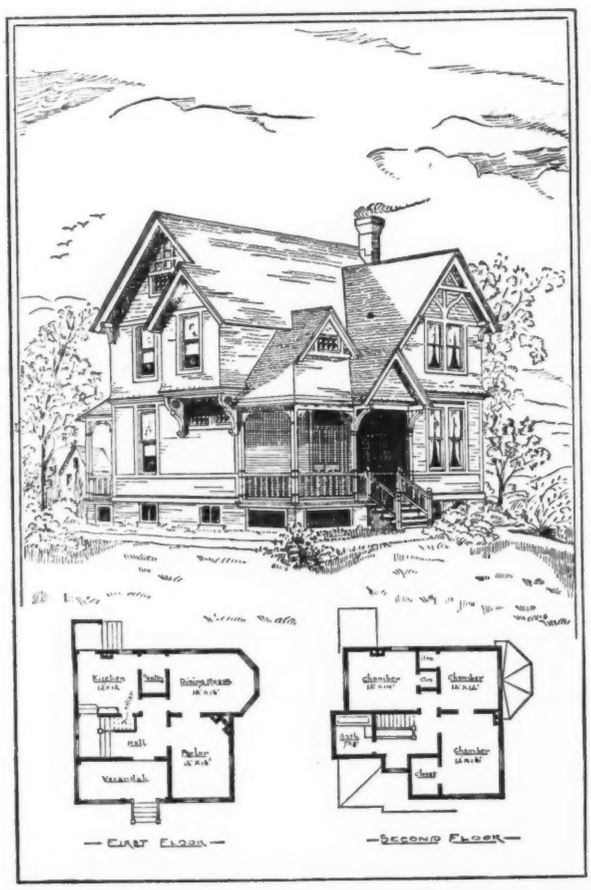
"The reader will note that we now have three layers of paper in the walls of the house. Paper is one of the best nonconductors of heat and cold. It is well known that a half dozen newspapers are as good as a blanket; it may be said as well that they will keep out as much cold as a plastered wall."

We wonder just how good this material was. It is doubtful that it was really as good as was claimed though it apparently was among the first of a long and successful line of manufactured wallboards which are now in the process of changing the entire mode of construction of the American House.

In the same year, 1887, a paper roof is rather hesitatingly recommended as suitable for inexpensive homes. It states that the roofing is a heavy manila paper, of extra weight and quality and painted on one side. It was tacked on roof sheathing of matched boards or of common millboards laid edge to edge. It required no battens and looked very neat. The claim was made that it "withstands weather and winds, does not corrode and does not injure the rain water. Its cost is about one-half that of shingles."

Growing Pains in Architecture

The brown stone front of New York was one by-product of the false elegance of the '80s with the black walnut woodwork, the marble slab fireplaces, parquet floors and ornamental plaster



The plan becomes more integrated in this house of 1887, published in Godey's Lady's Book, though the exterior lacks expression of anything but confusion.

rosettes on the ceilings from which hung chandeliers with all their brass chains and sandblasted etched glass globes.

The Romanesque revival beginning about 1876 and lasting until the Chicago World's Fair of 1893, had a tremendous influence on public buildings of the time, as can be seen in many towns by the substantial old rock faced buildings, generally in brown or red stone, with deep, large, round arched doorways and windows, with very little cornice, and with a high roof and copper covered dormers, with invariably heavy chimneys and possibly a round tower. The few houses which followed this style were generally mansions but the master and originator, H. H. Richardson of Boston, produced a few small homes along with

his big buildings which stand as masterpieces of domestic work. The exterior of these small homes was generally finished in shingles. With very little ornament the exterior mass of the house was simple with perhaps an octagonal ended bay. All in all these houses were as pleasingly domestic as any that had been built in America.

However, the lag of public opinion as far as the small home went, did not permit the extension of this very satisfactory type of home to the public in general. Richardson himself died in middle age, in 1886, and only seven years after that the World's Fair in Chicago changed the whole course of architecture back once more to the Classics. His houses, the best produced in that century, then were submerged, and though he was the best known architect in the country, they were overshadowed by the important courthouses and libraries and commercial buildings that he was doing. Perhaps if those few excellent and satisfying houses had been published for the people to see they would not have been satisfied to go back to the sterile readaption of a readaption of the classic.

The Twentieth Century

The dawn of the Twentieth Century saw houses somewhat simpler than had gone before but still box-like, cut into many tall, square rooms, set up on brick or stone foundations as if they were afraid of snakes, and not even then being able to contain some of their space which popped through the roofs in the shape of dormers. There were some houses that pretended to the colonial or the English, but such pretentions were limited to woody modillion cornices or to fake timber work.

Central heating had come to be expected in the ordinary home and all the handbooks for prospective home owners compared the virtues of hot air, water or steam heat. Registers tortured the floors or radiators obliterated the wall space of these houses. The bathroom too had come into the house by this time with cast iron tubs on claw feet and marble slab top lavatories. Toilet tanks were high on the wall and operated by a chain. The water piping and the waste connections were generally of lead and much of the heating and plumbing piping was in the open.

The mechanical inventions had certainly made living more comfortable in the house but the house had not been designed to take care of these developments. The developments manhandled the house and left it staggering.

The interior suffered from an over-abundance of woodwork and the exterior groaned with porches, stoops, railings, balconies and portecocheres. The house was a carpenter's nightmare.

The next few years were to see some changes for the better. A real feeling that a genuine American architecture should be produced was in the air.

During the industrial expansion of the period following the Civil War there were many reactions to the "Tyranny of the Machine." John Ruskin in the 1850s and William Morris in the latter part of the Century were great influences against the machine in art. This did not seem right to the Americans who were very proud of their industrial progress, but nevertheless could not reconcile art and the machine.

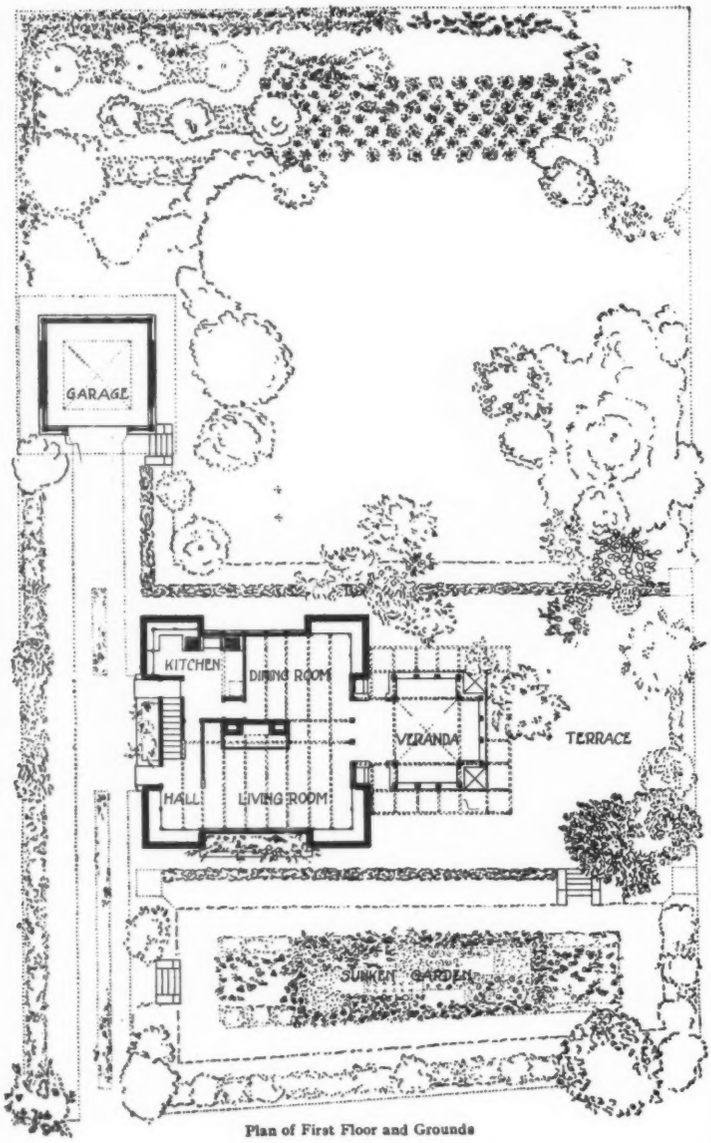
A house at the turn of the twentieth century, high, restless, full of dormers and bays

The Chicago School

Chicago, in the 1890s, produced a school of architecture which attempted to express the supremacy of the machine. This is all the more remarkable because in 1893 the Columbian Exposition of Chicago cut off as by an axe the trend toward an American architecture and substituted the white columns of the classic. From it, and lasting until the present time, sprung what is known as eclecticism, wherein designers chose from among any of the historic styles to decorate their modern buildings, and decoration it was for certainly the construction was nothing like that which had been used in those historic styles.

The Chicago School which, for a long time, fought a losing battle against such falsities in architecture and the use of materials had, as its leading exponent in the field of the house, Frank Lloyd Wright. "The machine is a normal tool of art civilization. Give it work that it can do well," is his creed.

The architects of the Chicago Schools were in revolt against the hierarchy of the leaders of architectural fashion. This fashion dictated the use of accepted historical forms so the Chicago School produced an entirely new vocabulary of architecture, natural in its use of material and free in its conception of plan arrangements. Decorative and beautiful they were with an atmosphere that few houses have had, an atmosphere of home and naturalness. Instead of being tall and ungainly they were low and horizontal, hugging the ground, standing firmly upon the base and sheltered by low over-hanging roofs. Whole



Plan of First Floor and Grounds

Plan of a small house as designed by the architects of the Chicago School. The grounds became part of the general plan. No longer was a house merely set down on the lot in any way it happened to land. The veranda does not darken the rooms and is separated from the entrance for privacy. Both main and service entrances are from the drive, an advanced solution to the general use of the automobile as this house was built in 1912. The hall, living room and dining room are one open space subdivided by the position of the chimney. The dotted lines represent structural ceiling beams, not partitions. French doors to the veranda may be opened, throwing that space into the living space and forming a delightful transition to the gardens. The house is being released from the bondage of four walls.

walls were opened into casement windows and partitions were eliminated to throw the interior into one open spaciousness.

The materials used in these houses were various, but always in their natural finish. Exterior wood was usually rough as it came from the saw, then stained. Interior wood was flat, without moulding or carving, stained and waxed, never painted. The walls were sand-finished plaster, the chimneys and fireplaces natural brick exposed.

In fact, these houses built 40 years ago are still more modern than most houses built just before the war. They were not bound by rules or conditions which had no application in this, the age of the machine. For instance, instead of adapting the electric bulb to an oil lamp or a candelabra, as is still done when attempts at period styles are made, these houses had lighting as a natural, integral part of the design. The heating also became part of the design as the interiors achieved a unity and a coherency which no period style could possibly have after the injection of modern comforts.

These houses became part of the surroundings. They melted into the plan of the grounds, wall areas opened to the terraces, and porches extended out into the garden to form a unity of composition so the house and the garden could be enjoyed as one.

The influence of the Chicago School continued until the first World War when it was submerged by the stoppage of building. It did not reappear in force after the war as the fashionable Paris "Beaux Arts" education of the influential eastern architects very effectively put the approval of fashion on the use of historic styles in architecture.

Though it seemed that the magnificent experiment was dead, as indeed all the critics and architects of the time thought, we can see now in retrospect that it was merely dormant here in this country. It was picked up in Europe, particularly by the Dutch, modified by national racial and geographical influences and developed there into a modern European architecture.

"International" Modern Style

This architecture came back to America under the guise of something entirely new called the "International Style." The characteristics of this style were plain white surfaces, strip windows, sometimes running around the corners, flat roofs, steel pipe columns, and an utter lack of ornament.

This was a far cry from the very human and homelike architecture of the Chicago School. It is no wonder that it was not recognized as springing from the same source. Americans did not like it and for good reason. Building in Europe, particularly Germany, had to be done with utmost economy after the first World War and apparently a clean slate had been the desire of those peoples. In this respect it had wholesome influences by starting the thinking in the direction of mechanical simplicity and the use of manufactured materials in the home. But American it was not and American it could not be. For this reason the whole idea of a modern

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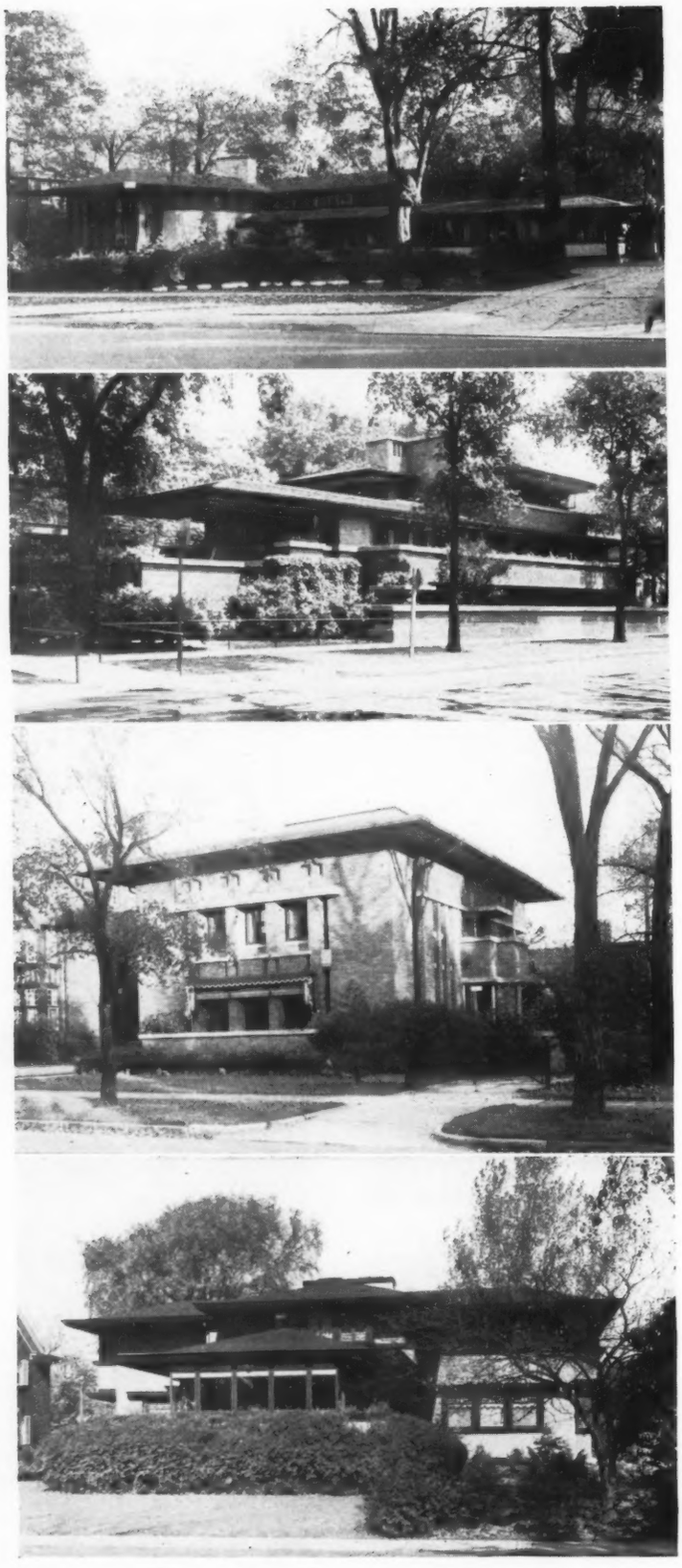

Houses of the Chicago School, the upper two built in 1908, the lower two in 1914. Horizontality predominates. The design takes on the appearance of belonging to the age of the machine, yet recognizes that one does not have to live in a machine.

architecture received a bad name here as, naturally, the inference was that all modern architecture was the cold, rectangular flat roof type of thing which had been imported from Europe.

It was called "functional" and functional it was in structure. That is, its supporting columns were undisguised and there was nothing in the house that was not necessary from the standpoint of enclosing space or utilities. The primary function of a house, that of being a home, was completely neglected.

In the meantime when modern architecture was sojourning in Europe the houses of America were being built in all sorts of styles—or what the American people thought were styles. Most of them were bad copies of something that somebody else had already copied badly with the result that the misguided American public, thinking it was getting a genuine Cotswold cottage, was merely getting the name itself applied to some pretty bad stuff.

The most popular style right after the war was what passed for colonial. Gradually the popularity of this pseudo-colonial gave way to the English style, generally with half timber work, stone, stucco and brick all in the same building in a mad attempt to use all of the characteristics and motifs the designer had ever seen, in one small building. This was in the boom of the '20s when every American who could build a house imagined himself a "business baron" and wished himself surrounded with baronial splendor. The use of the style disappeared abruptly with prosperity.

Materials Struggle with Style

It should be quite obvious that the use of these historic styles would be a detriment to the development of modern building materials. Only those materials which looked like or could be faked and tortured into the semblance of the materials used in the original prototypes could find acceptance in these homes.

How could it do plaster any good, for instance, to neglect the development in that material by palming or raking it after it was on the wall, purposely to simulate the poor workmanship of the quick drying material used years ago, even going to the extent of putting cracks in the wall by hand with the point of a trowel to give the impression of "respectable age"?

The development of plaster from gypsum rock, hard wall plasters and Keene's cement, and the manufacture of hydrated lime, made plaster a material unworthy of the degradation to which it had been put. Metal lath had been introduced and then rock lath, so that the vagaries of wood lath were eliminated.

The house after 1910 could have had metal weatherstripping though its general adoption was confined for some years to more expensive houses. All the new comforts, central heating, electricity, though at that time gas piping was still put in for emergency use, bathrooms, to say nothing of the desire of the low cost home owner to get as much of the "architecture," as he thought of the expensive woodwork, into his house, had begun to run up the cost of the desir-

(*Continued on page* 176)

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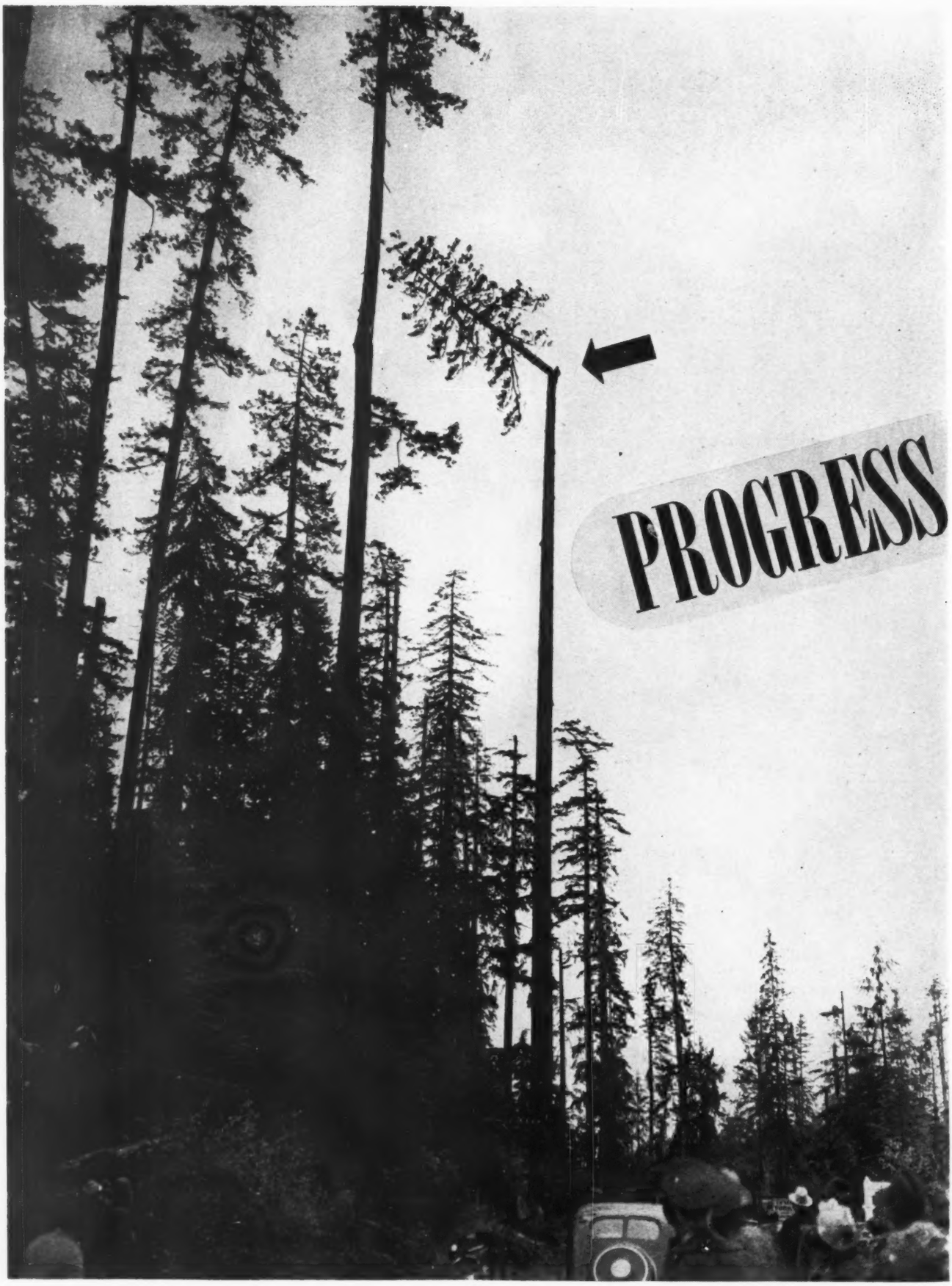
PROGRESS

IN LUMBER PRODUCTION

Lumber has both profited and suffered because the trees from which it is produced are unique among our natural resources. The trees comprise the only one of the so-called natural resources that is readily accessible without tunneling, mining or boring operations. For that reason, their product—lumber—became the first and most widely used building material. Because of the workability of lumber and the fact that it is the only self-renewing natural resource, it has continued to be the world's primary building material. As a corollary, however, it has suffered from acceptance.

To the man on the street there is nothing mysterious about lumber. It comes from trees, and trees are everywhere, providing cool and refreshing vacation retreats, shading lawns, parkways and homes, beautifying landscapes, bearing fruit to eat, and finally appearing as lumber or firewood. Lumber, in turn, appears in the form of thousands of products ranging from toothpicks and pencils to buildings, ships, airplanes and furniture. Nearly everyone has felled an isolated tree or has seen one felled. Nearly everyone has read a book or seen a movie that dramatizes the life of a lumberjack, and indicates that lumber production is largely a matter of breaking log jams in a river drive, then cutting the logs into lumber and shipping the lumber.

Thus, in the lay mind, logging is a somewhat moth-eaten although romantic business; manufacturing lumber is a simple matter of sawing logs into boards; and there is not much difference between any two pieces of lumber.

Why logging and lumbering are often viewed as static and unprogressive industries, and why so little is known about the varying qualities and uses of different kinds of lumber might be the result of insufficient public education effort. Again, it might be in large part one of the penalties of acceptance. It has been said that if there were a need to arouse interest in air, our most vital need, the only way to accomplish such interest would be to shut off the supply of air for one minute. It is possible that current wartime restrictions on civilian use of lumber might arouse public interest and curiosity to provide the industry with its first real opportunity to convince the public that lumbering is a highly mechanized, thoroughly modern process; that its products are as greatly improved over those of seventy years ago as the products of any industry; and that its products of the future will be unlimited in utility and quantity.

Improvements in logging and lumbering have at least kept pace with other industries, and perhaps have surpassed many. They have occurred as rapidly as mechanical, electrical and scientific developments have made such improvements possible. The result is that lumber and other forest products have improved correspondingly.

Early settlers along the Atlantic seaboard, and in many sections of the back country cut trees for two primary and inter-related reasons. The first of these is that logs and hand-hewn timbers were needed at once for the construction of shelter, and firewood was needed to heat the crude but sturdy cabins. The second reason was the almost equally imminent need to clear land for the planting of crops. Commercial logging and lumbering followed closely on the heels of settlement to provide boards and dimension for better houses, furniture and domestic and agricultural tools and equipment. Since the need to clear land for farming was almost equally important with the need to provide shelter, waste in logging, lumbering and wood use was an early characteristic.

As the westward expansion was completed to the Pacific Coast, and as land was cleared for farming, economies in lumber production appeared, and these have continued to develop ever since. Paralleling economies in production have come refinements in quality, and with the present era of great industrial chemistry advances, wood is in the forefront with the promise of a host

President Roosevelt congratulates the high-rigger who topped the tree shown in the picture on the opposite page

Left. Hand falling. Right. Fallers using gasoline motor powered saw

of new products. The development of scientific forest management methods, and recognition of timber as a crop hold the certain promise of sustained and improved yield. These are among the strongest trends in recent years, and represent one of the most important steps in the progress of the industry.

Logging methods have always been dictated principally by climate, terrain and size of logs to be cut and handled. It is not the purpose of this article to detail a step by step development of logging, sawmill and planing mill practices, but to mention only a few of the outstanding practices, machines and tools that provide the backdrop for present mechanized operations.

The first highways for logs were the rivers. Trees along their banks were felled with hand axes, handsawed into logs and rolled onto the icy surfaces of the rivers in winter. With the thaw, spring freshets carried the logs downstream under the skillful guidance of river drivers who prevented jams, or broke them when they could not be avoided. Log booms or rafts, great islands of logs held together with chains, were later floated or towed downstream to the mills.

Skidding logs to the streams was at first a manpower operation, but as logging moved back from the river banks and up into the valleys, bull teams and oxen replaced men. In winter the teams pulled loaded sleds over snow roads. In other seasons they pulled logs over skid roads or corduroy roads. Skid roads were made of large logs spaced seven to nine feet apart, and at right angles with the direction of haul. The tops of the logs were notched along the center line to provide a track, and greased to reduce friction. Corduroy roads were made of smaller logs laid solidly, and also notched and greased. In hilly country, sleds anchored to stumps or trees were loaded, then let down an ice road by paying out a cable.

In the south, with flat land and slow moving streams, the gravity methods of moving logs from the woods to the mills generally were not used. Here, straight ground skidding, and hauling by men,

Left. High climber on the way up with his equipment. Right. Bucker at work

BUSY. H...

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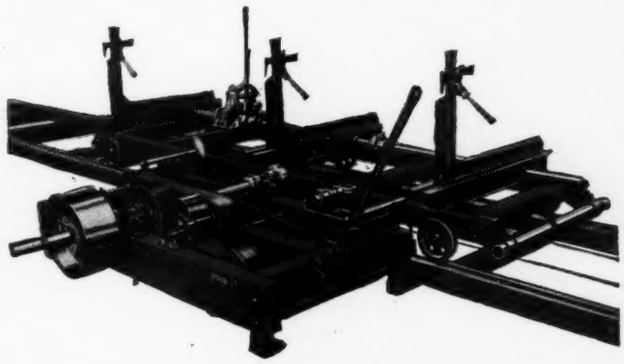

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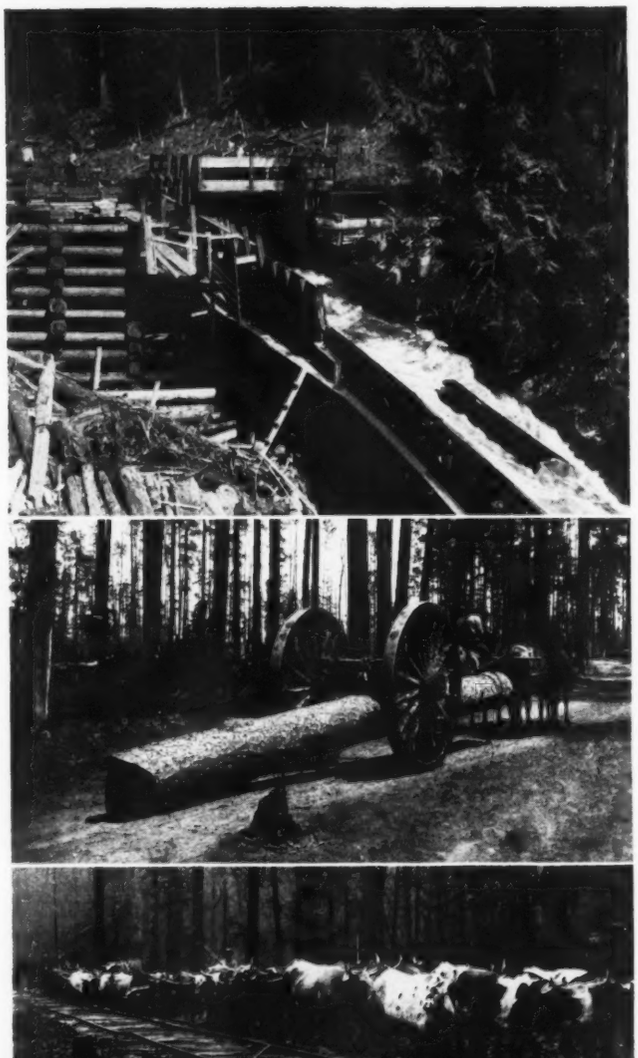
teams or railroads, and later by automotive power, have been the rule.

Generally, two methods of ground skidding or overhead skidding have been used to get logs and timber from the forest to the loading dock, river bank or mill pond. Ground skidding went through the stages of manpower, ox or bull teams, high wheel carts still in use in some parts of the country, various types of donkey powered skidders, up to the modern crawler tractor operating with or without one of several types of steel arch. There have been numerous other inventions for skidding, some of them still in use, but the most modern method of delivering logs to transportation docks or mills is by means of the tractor, and the motor truck and trailer.

The rivers eventually gave way to logging railroads as a means of transporting logs to millponds. These in turn have now been superceded or supplemented by truck and trailer transport, with fleets of trucks often operating over privately owned logging highways, delivering logs to railhead or millpond within economic radii.

Between 1870 and 1890 logging developed greatly from the oxen and horse logging stage. One of the most notable developments in skidding was the invention of the Dolbeer donkey in 1890 by the Dolbeer & Carson Lumber Co. of Eureka, California. It was a spool donkey, somewhat crude, but its advent marked the beginning of a great change in logging on the Pacific Coast. It brought in the era of overhead skidding. Later, came steel spar skidders, skylines, high leads and slack lines, some picking up the log and carrying it entirely overhead, and others acting as mechanical ground skidders.

Through the years the donkey engine developed into the steel-spar skidding outfit, weighing 150 tons and capable of bringing in a 25-ton load at one turn. The daily capacity of these machines ran as high as 250,000 board feet a day. There were intervening stages between the Dolbeer and the Skidder when the size and speed of the donkey engines increased steadily. The change to more efficient donkey engines occured about 1905, and the Skidder came into use about



Above, top to bottom. Log in flume. Old style high wheeled cart. Oxen hauling logs to rail head
Below, left. Hauling logs by mule operated windlass, locally called "drumming." Right. Horse team skidding in the open

1920. Ground yarding changed to the high lead about 1912.

Following the use of heavy skidders some logging genius developed a lighter but efficient gasoline yarder which could be moved quickly through the woods to any desired location. The original engine used was the Fordson with about 30 horsepower. This was followed by gasoline engines delivering up to 200 horsepower, and these were followed by Diesel engines, a few of which have a maximum of 300 horsepower. Many woodsmen express doubt as to whether this latter unit is as economical as the 150 to 200 horsepower unit, but loggers have always wanted larger units, and it has been difficult to demonstrate that a better job can be done more economically with a lighter machine.

The trend is toward smaller unit crews and lighter and more flexible machines. Light machines, yarding, and then truck haul up to the economical limit of distance, perhaps 25 miles on an average, thence by railroad to the mill, is a popular combination.

It is interesting to note that horse logging and the use of ox teams were very satisfactory as long as it was possible to limit the hauling distance to less than a half mile, and also to have water transportation at the end of the haul. As soon as the donkey engine brought an increased production it was necessary to have a means of more rapid transportation, and the first logging railroads were built for that reason. Improvements in railroad logging were brought about chiefly by higher speed locomotives built for heavy duty, and later the introduction of saddle tank types of locomotive.

Truck logging began about 1913, became important in 1920, and was extremely important from 1932 on. The first tractors were introduced to logging about 1917, and became effective about 1925. The first Diesel made its appearance about 1931, and the Fairlead arch in 1930. Lighter and more flexible logging units became a possibility when improved trucks had demonstrated their ability to reach more isolated timber tracts. That opened the way for lighter and more flexible logging units such as tractors and gasoline or Diesel powered yarders. Since 1930 the expansion of truck logging has been rapid, and the size of the machines has increased steadily, until now the gigantic RD-8, with a huge loading arch, is capable of bringing in 8,000 board feet of logs at a turn. The extreme mobility of these tractors has made it possible to log areas which were not thought to be within economical range prior to 1930.

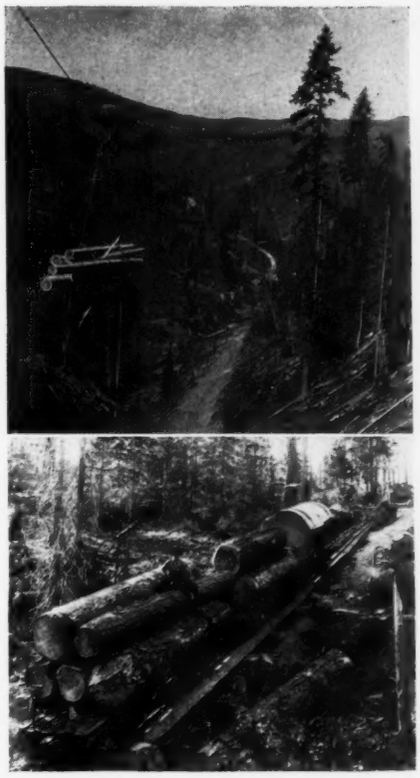
Developments in truck logging have come with improvements in tires, axles, motors, cooling devices and chassis construction, all pointed to carrying bigger loads. Diesel powered motor trucks currently in use can carry as much as 30,000 board feet in one load where roads can be built to stand up under that kind of a load. Loggers have learned that it is wise to build wide, well drained and well ballasted roads before attempting to move heavy loads to water or rail terminals. Most private logging roads today compare favorably with good county roads.

Summarily, yarding developments can be traced from manpower to the ox, (the picturesque water flume was used in hilly and mountainous country, as were other devices) the donkey engine, the skidder, gasoline or Diesel yarders and finally the tractor. Loading machines have followed an almost parallel course. Improvement in transportation has been through the ox team stage, the railroad stage, to the truck stage often in combination with railroad transportation.

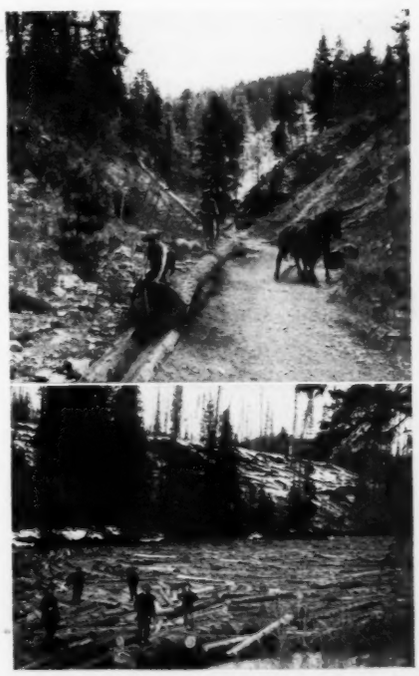
The ingenuity of the logger has kept pace with modern industry. Each new problem presented by terrain, climate or remoteness of tracts to be logged has been answered effectively. The skidder permitted logging over rough country and at much longer distances from railroads, and when this method failed to meet the requirements of new problems, yarding machines were set up within economical limits of the skidder's reach, and logs were yarded into a pile or cold deck. From there they were skidded to a landing where they were loaded.

Felling tools and log handling tools have interesting histories. Many of them resulted from the ingenuity of woodsmen and sawmill operators. The saw, of course, is a notable exception, but much of the development of many kinds of saw are traceable to the needs of the lumber industry. It is pertinent to state that manufacturers of wire rope, logging blocks, axes, saws and numerous other items of equipment have kept abreast of every change in logging methods.

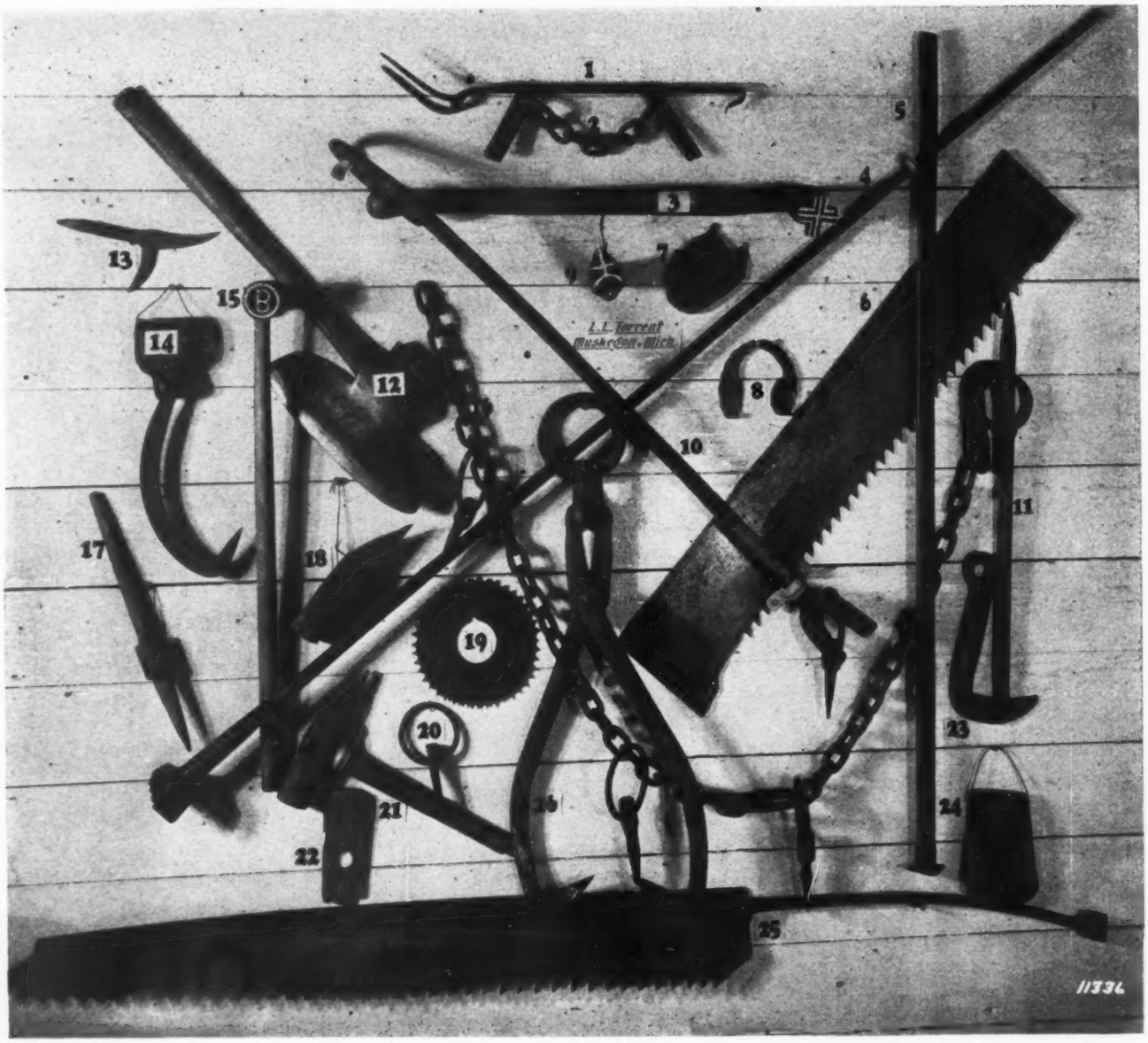
About 1880 reciprocating crosscut saws began to replace the axe as the felling tool, although for



Top. One method of getting logs over difficult terrain. Bottom. Incline on a logging railroad where logs are carried over a ridge by cable



Top. Boy greasing logs on log chute. Bottom. Log jamb in river.



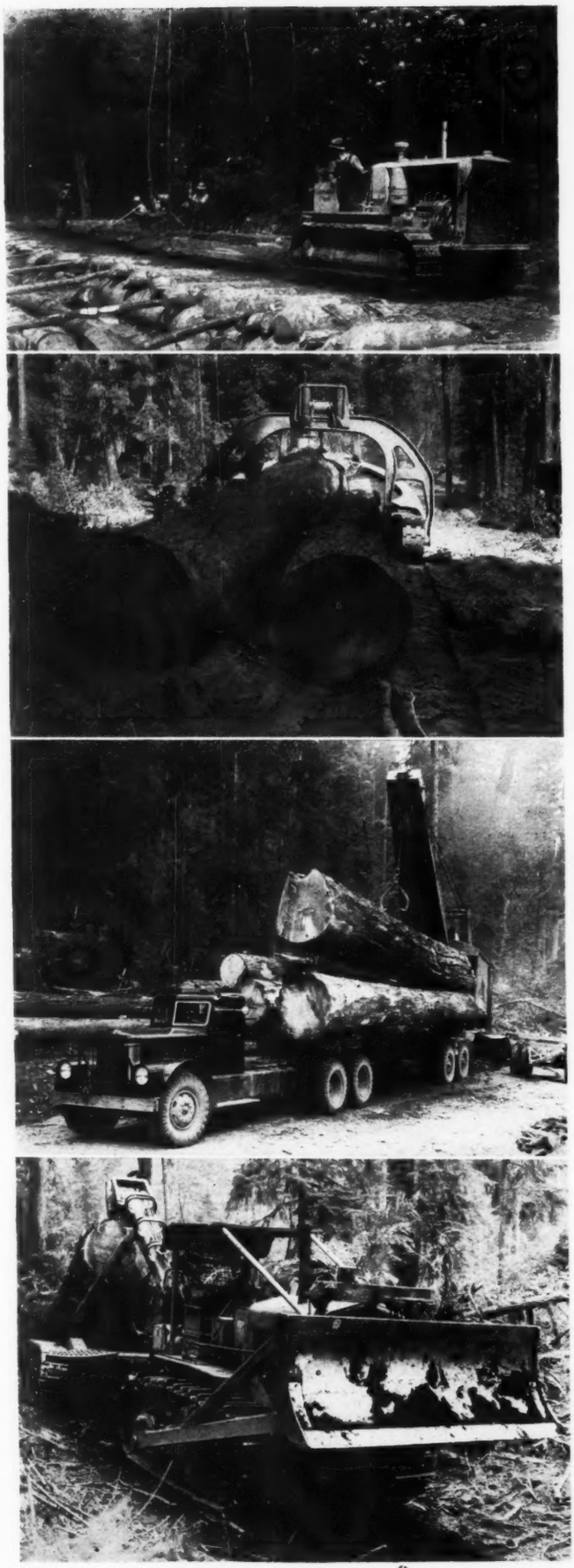
Old logging tools identified by the numbers on the board

1. Fork used in lumber camp kitchen.
2. Boom coupling.
3. Marking hammer.
4. Punch bar, for marking logs when piled.
5. Tally stick, for measuring log feet.
6. Gang saw, used in saw mill.
7. Caulk nails, used on soles of boots.
8. Ox shoe.
9. Marking hammer.
10. Iron dog puller, for pulling iron dogs from logs.
11. Boom stake, driven into pile for quick hitch.
12. Broad ax.
13. Pike.
14. Canthook.
15. Marking hammer.
16. Logging chain.
17. Peavy.
18. Dod hammer, used to drive iron dogs into logs. One end is pointed to drive into log to keep from falling into water.
19. Knot saw, used in shingle mill.
20. Iron dog.
21. Dod hammer.
22. Wood dog, same as iron dog, rope used instead of chain.
23. Swamp hook.
24. Single bit ax.
25. Cross cut saw.
26. Logging tongs.

undercutting, the axe is still used widely. The advent of the modern cross-cut saw resulted in a great saving of time in felling trees. Its inspiration was the old up-and-down saw and the earlier pit saw. Addition of a raker tooth to the reciprocating cross-cut saw was a notable development. It is advantageous for quick clearing action, and insures quicker cutting especially on green timber.

There has been a notable development in saws in the last ten years, and this has been accentuated quite recently. This is the use of the power falling saw, now manufactured for either gasoline or electrical motors. Improved designs in the saw and reduction in the weights of motors now make them comparatively easy to handle, even in rough country. Their use is particularly important at this time with the scarcity of manpower, especially trained fallers. Some of these units with a three-man falling crew can cut 100,000 board feet a day in average mountain country. Further developments can be expected, with probable reduction in weight to about 50 pounds, and the saw bids well to become another milestone in time-saving tools for woods operations.

Generally, the basic floor plan of a sawmill has changed very little in the past forty or fifty years. The average sawmill still consists of a log slip, band mill on either or both sides of the log deck, an edger, an automatic trimmer, a slab slasher, live rolls and transfer chains in about the same position they have been in for many years. In



Top to bottom. Logs being knocked loose after being skidded by tractor to the loading boom. Logging timber with a tractor and truss wheel arch. Loading truck and trailer in the forest. Yarding with tractor and arch, tractor equipped with bulldozer

many cases sash gangs and resaws supplement the head rigs.

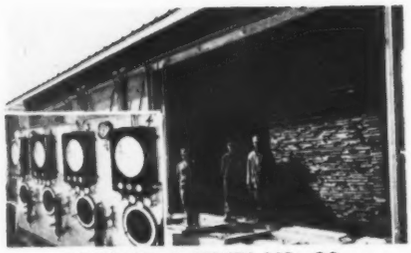
Small portable mills either steam, gasoline or Diesel powered, are numerous in all parts of the country. Generally, these mills include a band or circular head saw, an edger, and often a planer.

The permanently situated sawmill of today is completely mechanized. All handling of logs and boards is done mechanically. In many mills the circular saw has given way to the band saw. Improvements in continuous action saws have played a large part in keeping the price of lumber within reach of the average consumer's pocketbook. Development of continuous action saws to replace reciprocal action saws revolutionized the production of lumber from logs, and resulted in great savings in time and labor.

The first form of continuous action saw, and the one used to a greater extent than any other today, is the solid tooth circular saw. Following this came the inserted tooth saw, a great forward step in the life of this kind of cutting tool. The circular saws, however, even those of more than 100 inches in diameter, limit the size of log that can be handled. For logs greater than the cutting depth of the largest circular saw, two of them have been used one above the other.

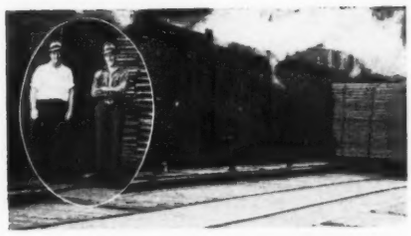
The last word in continuous action mill saws is the double-cutting band saw, made in widths up to 18 inches. Ordinarily made in lengths up to sixty feet for sawmills, there is practically no limit to the size of log that can be handled by the band saw. The thinner gage of the band as compared to the relative thickness of a large circular saw, cuts a smaller kerf, and results in saving lumber. Large band mills are equipped to bring the work to the band, mounted so that it can be tilted. The carriage bringing the work to the saw is driven by feeding devices working independently of the saw. In some band mills, gangs of reciprocating saws that can cut as many as 50 boards at one time are used as adjuncts to the bands.

A few mills use band gangs made up of four 6-foot band rigs carrying 10-inch saws. They are set one back of the other to permit sawing different thicknesses of lumber. To change from one thickness to another the operator throws a lever controlling a valve on a compressed air cylinder. The cants are fed through the gang band on live rolls running vertically, those at the rear



CHAPMAN & DEWEY LBR. CO.
MEMPHIS, TENN.

RUDOLPH WURLITZER CO.
N. TONAWANDA, N. Y.

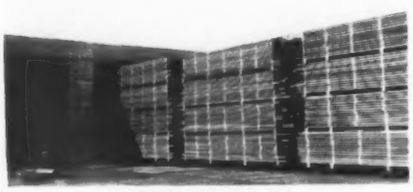


WESTMINSTER SHOOK MILLS LTD.
NEW WESTMINSTER, B. C.

J. NEILS LUMBER CO.
LIBBY, MONT.

CAMFIELD MFG. COMPANY
GRAND HAVEN, MICH. (Veneer)

EDW. HINES LBR. CO.
HINES, ORE.



PACIFIC LUMBER CO.
SCOTIA, CALIF.

M & M WOODWORKING CO.
ALBANY, ORE. (Veneer)

SITKA SPRUCE LBR. CO. LTD.
VANCOUVER, B. C

Moore Cross-Circulation Kilns Are Drying All Types Forest Products for War Effort

Limited space permits showing only a few of the more than 2,500 Moore Cross-Circulation Kilns seasoning all species and thicknesses of lumber, veneer and other forest products for the war program.

Some of these plants are seasoning airplane veneer and laminated propeller stock, and others walnut gunstocks, lumber for army truck bodies, army cots, barracks, boxes for shipping food and ammunition to our soldiers overseas, and thousands of other items. Moore Cross-Circulation Kilns are seasoning these vitally needed materials to desired uniform moisture content.

In many cases, these were old-type kilns converted to Moore Automatically Controlled Cross-Circulation System, utilizing existing kiln buildings and metal equipment.

And what a difference the Moore Cross-Circulation System* makes! It increases drying capacity 30-50% and greatly improves quality of seasoning, besides reducing drying and handling costs. Moore Cross-Circulation Kilns soon pay for themselves, and will prove a good investment at your plant.

MOORE DRY KILN COMPANY

WORLD'S LARGEST MANUFACTURERS OF LUMBER AND VENEER DRYING EQUIPMENT

JACKSONVILLE 1, FLORIDA
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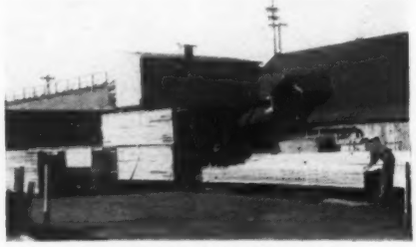
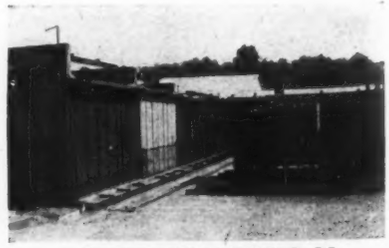
*There's only one CROSS-CIRCULATION System — MOORE



POLSON LBR. & SHINGLE CO.
HOQUIAM, WASH.



ATLANTA OAK FLOORING CO.
ATLANTA, GA.

ANGELINA HARDWOOD CO.
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RUTHERFORD COMPANY LTD.
MONTREAL, QUEBEC

BLOEDEL DONOVAN LUMBER MILLS
BELLINGHAM, WASH.

JUNEAU LUMBER MILLS
JUNEAU, ALASKA

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Lumber & Veneer For All-Wood Mosquito Bomber Seasoned With Moore Cross-Circulation Kilns

The Mosquito Bomber, world's fastest Fighter-Bomber, is built entirely of wood. Lumber and veneer for the "Mosquito" and other all-wood airplanes are seasoned with the Moore Cross-Circulation System.

These modern kilns maintain drying conditions automatically, and season lumber on predetermined schedules which retain the strength and flexibility of the wood.

COTTON & HANLON
ODESSA, N. Y.

UNION OF SOUTH AFRICA
PRETORIA, SOUTH AFRICA

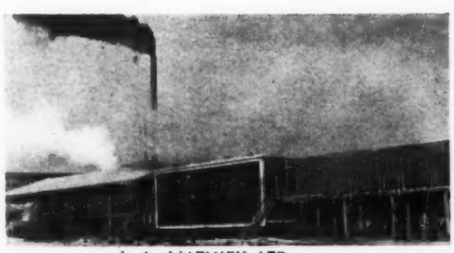
LONG-BELL LUMBER CO.
WEED, CALIF.

SCIENTIFIC LUMBER DRYING
DRY KILNS
THE WORLD OVER

For 64 years—since 1879—Moore Kilns have served continuously the lumber industry in the United States, Canada and other countries. Moore Engineers are constantly making improvements to increase drying capacity, reduce drying costs, and improve quality of seasoned lumber.

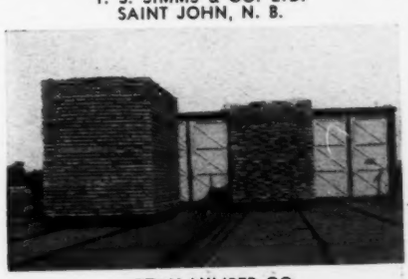
WOOD RELEASES STEEL FOR VICTORY

T. S. SIMMS & CO. LTD.
SAINT JOHN, N. B.



J. A. MATHIEU LTD.
RAINY LAKE, ONT.

NEW ENGLAND BOX CO.
KEENE, N. H.



OZAN LUMBER CO.
PRESCOTT, ARK.

of the table being stationary, and those on the opposite side movable to admit different size cants. The rolls on the front side feed the cant through, and hold it tight to the vertical table by air pressure. The band slabber is made of two bands, a right and left, through which the log is run. A screw machine is used to adjust the saws according to the size of the log to be cut. As the log is fed through the trough, the two sides are taken off simultaneously.

Refinements in manufacture have been numerous, particularly since 1920. In the early days of the present century, planing mills had been improved with the inauguration of jointed heads with an increased number of knives per head or cylinder, each knife doing its own part of the work. Increasing the number of knives when it was discovered how to grind them to precision on the cylinder, made it possible to increase the feed, and therefor the output. At the same time a smoother job was obtained than when the knives were ground independently.

Another notable improvement is the patented so-called "upside down" machine, which takes the cut off the bottom side first, and makes for greater accuracy, as it sizes the lumber to a tolerance of a few thousandths of an inch.

One of the most notable improvements in the past quarter century, and one which made for smoother trimming, is double-end trimming with saws so constructed that they make a smooth cut across the grain. Added to this, they are set up as equalizers that trim both ends at the same time. This permits great accuracy in length, and reduces the amount of trimming that has to be done by hand on the job.

Another of the most outstanding improvements, particularly from the standpoint of saving lumber, and one long used in the manufacture of flooring, was the development of end-matching of common lumber for sheathing, sub floors and siding so that the pieces could be applied without centering on studs, rafters and joists. End matching machines were expensive to install, and made their appearance for general use just prior to the depression. After a few of the larger operators had installed them, other manufacturers felt that they could not afford to follow suit in face of the declining market of the early thirties. Now, when many would be installed, they are not available, and perhaps will not be until the close of the war removes restrictions on materials.

Spliced dimension is one of the latest developments in lumber manufacture. It is finding acceptance which will, no doubt, carry over in the post war period. Short pieces, usually two of them, are dovetail jointed and glued before planing. After being surfaced on four sides, it is often difficult to find the joint without careful inspection.

Scarcity of large timbers has brought a new development. This is the built-up timber or what is termed "glued laminated construction." This is the building up of large structural members by gluing together laminations of smaller pieces, such as an eight by sixteen stringer built up by gluing together laminations of two-inch pieces of varying lengths and widths. Many advantages are claimed for glued laminated construction. It can be fabricated to almost any size or shape from lumber of readily available sizes and lengths. Laminations may be selected for uniformity of grade and quality. The pieces can be seasoned so that the resulting structure will not shrink or check. A camber can be built in the piece to offset deflection. A haunch can be formed at the end to give greater shearing strength if necessary, or to provide greater area for timber connectors. The laminations on the top of a beam can be so stepped up as to give a slope for a roof. This construction presents the industry with the opportunity to build a structural unit of any size or shape.

From the standpoint of consumer value, development of the dry kiln for curing lumber ranks among the most important advances made in the past sixty years. Before the introduction of the steam heated kiln in 1879, lumber manufacturers depended on the primitive "smoke kilns" to dry lumber. Results were unpredictable and unmeasurable. Heat from burning slabs passed directly up through lumber piles, and if the kiln did not catch on fire, lumber became more or less dry.

The old type "smoke kiln" was made obsolete with the appearance of the steam heated dry kiln, first installed in 1879 at Verbena, Ark., by LaFayette Moore, better known as "Dry Kiln" Moore. Stacks 60 feet high drafted moisture out and helped create circulation. Later, it was found that one high stack on each kiln drafted out too much moisture, so two short stacks were substituted. Live steam sprays were introduced to supply humidity and reduce checking. Gradual improvements in kiln operation and design brought the drying elements under more accurate control. By

(*Continued on page* 191)

Loading trucks at the landing, showing how the spar tree is rigged

TWO WARS
THREE GENERATIONS

The management of the "SABINE" lumber interests has been controlled for THREE GENERATIONS—through ONE WAR, and a LONG WAY THROUGH ANOTHER—by the founders and their families, and ON THE PRINCIPLES the PIONEERS established for a RUGGED and HONORABLE INDUSTRY.

It has been a PLEASANT DUTY all these years to serve the DISTRIBUTING and CONSTRUCTING branches of such an industry, so VITAL IN PEACE, in providing a livelihood for a GREAT ARMY of CRAFTSMEN, and it has also BEEN AN HONOR to do our BEST in providing the SINEWS of WAR to keep OUR COUNTRY a place for just PLAIN, HOMELOVING, AMERICAN FOLKS.

We hope to continue producing the finest Yellow Pine and Southern Hardwoods for a long time to come, and we pledge ourselves to DO OUR PART to maintain the pleasant business relations we have enjoyed for so many years.

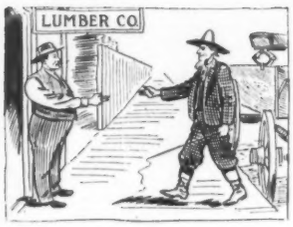
SABINE LUMBER CO.

Manufacturers

Sales Office
Houston, Tex.

General Offices
Trinity, Tex.

Sales Office
St. Louis, Mo.



The business of retailing Lu

PAST PRESENT FUTURE

THE RETAIL lumber business cannot be said to have developed along any one set pattern. Rather it moved along two or more courses which led to the same end.

Early, small sawmills along the east coast naturally sold their products direct to the people who were going to build with it. Perhaps some settlers would come from neighboring towns, purchase their lumber needs and haul it painfully to their building site. Then came the time when the community around the little sawmill was pretty well built up, and while it still continued to absorb some of the mill's output, it could not use all of the lumber which the mill had a capacity to produce.

The smart mill owner did not curtail his production to fit the local demand. Rather he took a trip down the river that ran through the town, or along the coast, and visited a village that was still in the process of expanding, and made arrangements to sell his extra production there. This was a second sales outlet, with the source of production at a distant point; fulfilling essentially the function of a retail lumberman today. The millman followed the river not only because that was practically the only way he had to move his lumber, but because the spread of population also followed the river.

Then there was another branch of development. It was inaugurated not by a millman, but by a pioneer who had moved on west, saw the need for homes, and for lumber with which to build them in the area which he was helping to open—saw the opportunity to be of service to his community and to make some money, and went back East to the lumber mills, bought lumber and took it West via the river to the growing town where he was located, and sold it to his neighbors and friends.

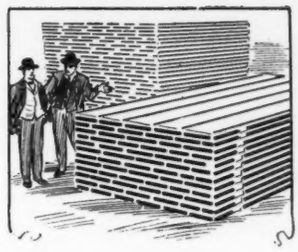
The trend continued. It thrived more especially along the river routes down which the lumber could be transported. Settlers who went inland via land routes went without finished lumber produced from the early eastern mills. Their homes were hewed from the forests which surrounded them, but were of logs and other rough products of the forest.

The opening of the prairie lands of the central west and the advent of the railroads were great developing factors in the retail lumber business. Great lumber yards grew at the western terminus of the railroads, and from these points lumber was hauled overland by horse and oxen to the prairie farms. Independence, Kans. was one such headquarters for a number of years as was Omaha, Kansas City and St. Joe, Mo., and from these points great quantities of lumber moved out to house the pioneer prairie farmers who had no local forest resources from which to build their homes.

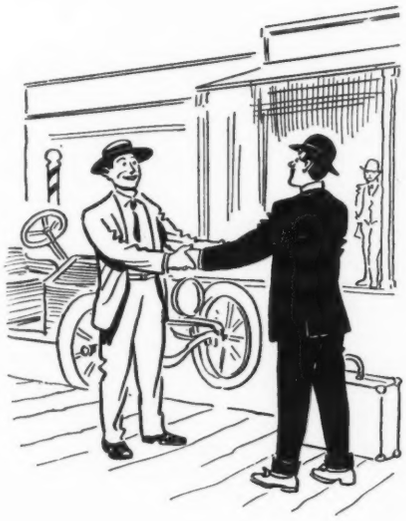
Many of these settlers on prairie farms were veterans of the Federal armies in the Civil War who had taken advantage of the land grants made available to those who served in that war. It is interesting to note that a large proportion of the early lumber dealers in that country were also Federal soldiers who, prior to the war, had been lumbermen in Wisconsin and Michigan and the North Central states. Day & Frees who operate yards at Superior, Nebr. and other Nebraska and Kansas towns is just one example of the retail lumber companies founded by Civil War veterans from Wisconsin which are still operating in that territory.

These retail lumber yards, which played such an important part in the housing of the pioneers and the development of the new world were built and operated along a single pattern. They were just what their name implies—yards where lumber which was for sale to all comers was piled. Perhaps in one corner of the yard there was a shack with a stove, in which the proprietor sat and kept warm, and waited for customers to come in.

But in those days he didn't have to wait long for customers. The country was a-building. The pioneers needed houses and structures that would serve as barns and sheds, and would buy them as fast as their financial resources would permit



g Lumber and Materials



(sometimes faster). The lumber dealer then was no different than many businessmen today. He invested no more capital in his business than was necessary to meet competition and to keep on selling his merchandise at a profit. His function was fulfilled when he had available a stock of lumber to sell to his neighbors and was on the job to take care of their lumber needs when they came to get them filled.

The first development was the storing of lumber stocks in closed sheds. Reports of retail lumber dealer association meetings in 1897 (as shown in the AMERICAN LUMBERMAN of that year) contain long discussions, pro and con, as to the worth of sheds to cover stock. There were as many dealers who believed the whole idea to be foolishness and a waste of money, as there were those who thought it advantageous.

Curled, warped boards always developed on the top of uncovered lumber piles. When some lumber was sold from that pile, the top curled boards were tossed aside to get at the undamaged boards, and invariably they were not returned to the top of the pile. The result was another top layer of good boards destroyed by the weather. Advocates of sheds pointed out that a good shed could be built from the lumber that was thus wasted in a short time in a single yard.

In the evolution of things, the practice of covering at least the better grades of lumber became standard. A glimpse at a mid-way point in this development is gained from a survey of expenditures on lumber yard improvements made by Met Saley for the AMERICAN LUMBERMAN in 1908. The comparison of six lumber dealers at that time gives an indication of the situation.

Lumber Dealer	Annual Gross Sales	Value of all yard improvements including office and sheds
A	$40,000	$6,000
B	52,000	6,800
C	45,000	4,500
D	20,000	1,000
E	26,000	1,700
F	35,000	4,200

Lumber dealer "D", when interviewed in January of 1908 snorted contemptuously, "The average lumber dealer throws away money on improvements. The nature of this business calls for no such expenditure."

The survey went on to state that the variance in the value of the yard improvements reflected in most cases, the lumber sheds possessed by the dealer, inasmuch as the lumber yard offices, in most of the cases, could be valued at around $500. Of course, in those days, $500 could build somewhat more of a building than it can today.

A reading of the "Realm of the Retailer" department as written by Met L. Saley for the AMERICAN LUMBERMAN in the early 1900's supplies not only an insight into early retail lumber dealer methods but an appreciation of the far-sightedness of Mr. Saley as he recommended to dealers of that era merchandising methods which are accepted, proven practice today. For instance, in his column, Mr. Saley told about calling upon a lumber dealer who pointed out a supply of calcimine stored under a dark stairway in his yard. "Bought that calcimine a year and a half ago and haven't sold but about $1.50 worth since," complained the dealer. "I was certainly robbed on that deal."

Mr. Saley inquired what had caused him to buy the stock of calcimine in the first place. "Saw a printed handbill about it," admitted the dealer. Then the AMERICAN LUMBERMAN writer went on to point out in his best straight-from-the-shoulder manner, that if this dealer bought the merchandise because he saw some advertising on it, he could probably sell it similarly —by advertising it to his townfolks. He also urged that the merchandise be brought out from under the stairs and put on display where people could see it. He took locks as another example; found the best quality locks on the market hidden away in cardboard boxes in the dealer's office—not a one in sight.

He watched a dealer pilot a customer to the farthest corner of his lumber sheds to show him moulding patterns in the actual long moulding pieces, and suggested in his column that all lumber-dealer readers of the AMERICAN LUMBERMAN take the hint and cut a short sample piece of moulding off of each pattern he had in stock and mount the samples on a board to be kept in the office at all times.

Today these things are taken for granted, but then they were real steps of progress. The fact that a lumber dealer had locks and calcimine in his stock at all was a matter which demonstrated his

progressiveness. Then there came another forward step in the retail lumber business. Dealers began to realize that the nation's women controlled a great deal of its buying, and if the lumber dealer was to come in for his full share of their business he must so conduct his business and care for his office as to make it acceptable to lady customers.

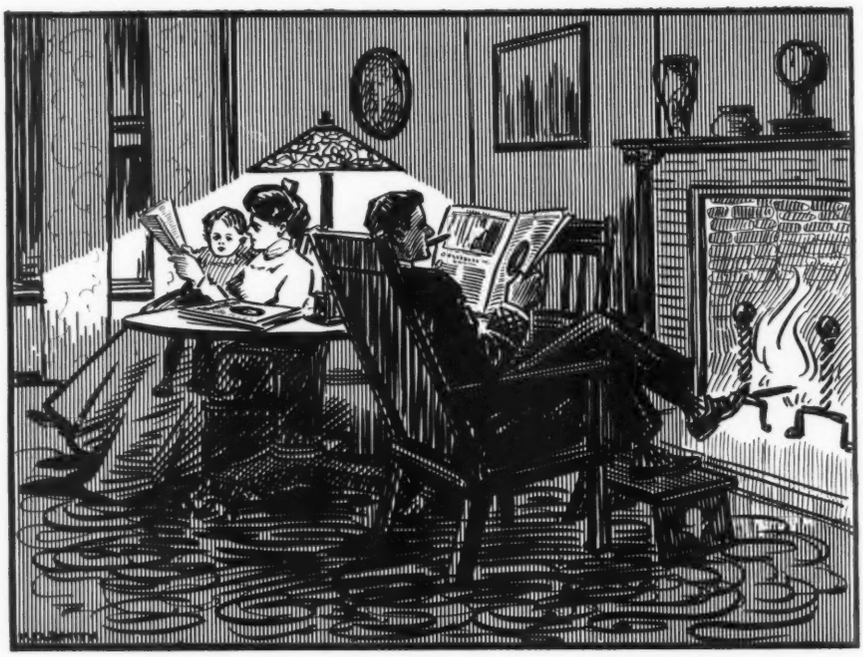
The AMERICAN LUMBERMAN was also the first to put this idea across. Here is how Mr. Saley approached the subject in his column.

* * *

"Ladies visit lumber offices for other purposes than to buy lime, and I must say it is to our discredit that there are those they would avoid provided they wore dresses which had an affinity for dirt and they were afraid of mice. Come to think it over, it does seem to me that I would want to keep my premises in such order that they wouldn't frighten away the tidiest beings on earth. I wouldn't want them to flee from my office and go to a better looking one to buy a front door.

"I wonder how many dealers consider this proposition in its length and breadth. Speaking from my experience they are few, or rather, but few act on it. There is one in Kansas, one in Illinois, one in Wisconsin—and that limits my vision. There are many nice offices, speaking in a general way, but only a few in which exclusive provision has been made for the ladies. In these few they can sit in easy chairs with their feet on rugs, with mirrors on the walls so they can adjust their hats. With such an outfit as this haven't you an idea that a lady would pay a grand profit on a front door? She would pay any kind of a profit, for she would look no further. She would think the place was made for her to fit, and a dollar of the old man's money would look no larger than a dime.

"Front doors are a lady's long suit. She may want to see the style of the inside door that is going into her house, and the transom windows, but principally the front door, and she can display all the taste of which she is master in selecting it. Too often she selects one under many disadvantages. It was several years ago that I was in an office when a lady stopped in and said she wanted to look at front doors for her house. 'This way, please,' the dealer said, and he led a way through a passage in which a water pail was placed on a sloppy



bench, dirty jumpers and old hats hung on the walls and other truck was thrown in loose, and a broom hadn't seen that place that spring. You should have seen that woman pick up her skirts. You would think live snakes were around.

"The passage led to a small dark wareroom and here the front doors were piled up against one another. The dealer tumbled them around the best he could but he didn't go to the pains to show them to any advantage. The lady looked on in sort of mute astonishment, and did not, so far as I heard, make any selection. Maybe she went to another yard—you couldn't blame her if she did. She was not in a ladies place to trade.

"We have only skipped over the surface of this subject. To probe into it we would find it has a bearing to an extent that it will affect trade, and those matters which affect trade, particularly for the good, we cannot afford to neglect."

* * *

Shortly before World War I the lumber dealers of the country began to recognize their real importance as vital factors in their communities, and many of them launched upon a personal public relations campaign that raised their prestige and standing as a group. In a word they became civic minded. They saw that anything they might do to better the community in which they were doing business would increase their opportunities to do business, and would at the same time help them become acquainted in their communities and help them to gain the good will of their potential customers. The campaign gained considerable momentum before the war, was interrupted by it, and then returned with renewed vigor to continue to pay dividends even to the present day.

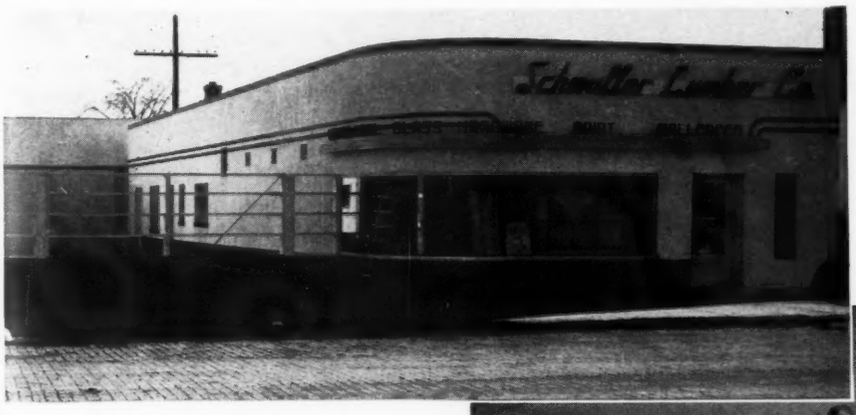
Supplying the material for building new homes had always been the principal business of the lumber and building materials dealer, but beginning with 1924 and 1925 the potentialities of the home remodeling business began to gain increasing recognition. This was an entirely new field and opportunity for the dealer.

Then came the "complete service" or "package" selling proposition for lumber and building materials men. Progressive dealers in all parts of the nation began to organize their business so that they would be able to supply most of the materials and render every service necessary to the building or remodeling or repairing of a home. It is a system whereby a customer may walk into a dealer's yard, find qualified assistance in choosing a house design suited to his family needs, and then relax in the confidence that under the direction of the experienced lumber dealer every detail in the construction of that home will be handled properly. The real progress in "complete service" selling did not come however until after the establishment of the HOLC, which made it possible for the lumber

dealer to take care of the home-builder's financing needs as a part of the "package".

(For an indication of the role that the AMERICAN LUMBERMAN *has played in these various steps of lumber dealer development outlined above see the article on the history of this publication by E. C. Hole, beginning on page* 104.)

For the past quarter of a century the average progressive lumber dealer has been adding, year by year, to the diversity of the lines of merchandise he carries in his business establishment; but it has been the "package" selling plan that has really brought this trend to a sharp focus. As the dealer has embraced more and more lines of merchandise in order to be able to render the service complete, he has become increasingly aware of the sales possibilities of each.



Glass is one of these items presenting untold opportunities. Glass manufacture has passed through several revolutions in the past few years and the wonder products that are coming from these factories present tremendous opportunities in homebuilding and decoration. The field is just opening up. The retail merchandising structure of the glass business is still flexible. There is no reason why the lumber dealer should not step in on the ground floor of this business which goes so far beyond window glass sales. He has the contacts—as a seller of window glass he has his foot in the doorway of public acceptance as the prime glass salesman of his community.

Small tools is another opportune field. The dealer knows the community's carpenters, contractors and builders better than any other businessman. He is the logical one to sell them their saws and planes, and hammers, and small power tools. Farmers, too, will fill their tool needs at the lumber dealer's yard.

The lumber dealer is the man who is called in to furnish materials when a farmer is going to build or remodel a barn. He is the dealer who has the best opportunity to sell that farmer new barn equipment—stanchions, manure carriers, cattle watering devices, etc.

He is right there with steel or wood posts when the farmer wants to build or repair a fence. The dealer should also have the fence wire on hand to do a complete job.

What about the farmer's barn floor, and the floors in his other farm buildings? The lumber dealer is the man with the cement who can supply that need. Here again is a field which presents a growing opportunity. Scientific agricultural practices embracing concrete feeding floors and walks and foundations and troughs are gaining ever increasing acceptance with practicing farmers, and present an expanded opportunity to the dealer. In this field the dealer should be prepared to render service as well as materials. If he has a small cement mixer he can rent or loan, and a staff member with a knowledge of cement installation he will win this business.

The insulation boards, decorative and structural, promise great things for the home and have a prominent place in the building material dealer's stock. The manufacturers of these products have done such a splendid job of advertising them to the public, and preparing booklets and folders for dealer distribution that show the possibilities of these items, that a clinching selling job is all that is required of the lumber dealer who handles them.

The United States Government itself is doing a tremendous sales job for all types of home insulation. Fuel savings, added comfort values, ultimate economy are all being stressed on a nationwide basis. The general acceptance is there. The dealer again needs only to clinch individual sales for blown insulation, blankets, batts, and poured type.

Weatherstripping has a part in this Government campaign also, and those homes which do not know its benefits from first hand experience present a splendid opportunity to the lumber dealer for a sale.

All these things are most logically sold through the lumber and building materials dealer outlet because if he is doing the right kind of a selling job he is the one person in the community who is associated in the public mind with every phase of the business of maintaining the home. That is one reason that people come to him when they think about paint and wallpaper and paint brushes, and all accessories for decorating. He handles the builders' hardware that finishes off their doors and cabinets and windows. Many look to the lumber dealer for their heating equipment and for the service which maintains it. He is the headquarters for all types of roofing: asphalt, asbestos, wood shingle, sheet metal. From him the homebuilder can have a choice of wood or metal sash, and in his yard

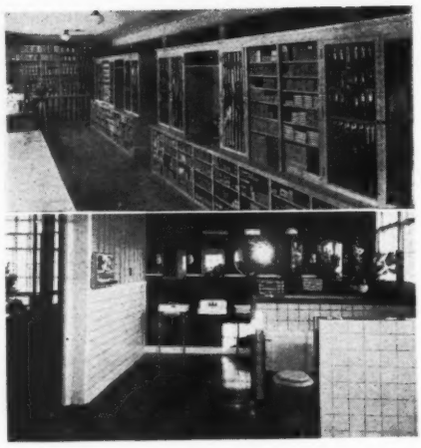
the merits of each can be compared and discussed.

Innumerable other items are a part of his stock: sandpaper, glues, medicine cabinets, nails, overhead garage doors, closet equipment, metal mouldings and trim, wire screen, and in the future a great new line of plastic products for home use.

All these things then, tied in with an undergirding structure of lumber and lumber products sales, make up a picture of the lumber and building materials merchant as he is. This brings us to the point where we are ready to contemplate the function of this merchant in the future.

On an ever increasing scale lumber dealers of the future are going to become the home building, home maintenance, home improvement headquarters of their communities. The war is having much to do with this. Other dealers who specialized in just one phase of home upkeep have in many cases been forced to close their doors because when war-time restrictions curtailed the output or sale of their one specialized item of merchandise their means of livelihood was cut off. On the other hand, the lumber dealer, with his diversified stock, is doing a splendid job of weathering the storm of war-time restrictions by shifting emphasis from those items which have been curtailed to others which are in the non-critical category. Thus, when the war ends he will be the one who still has contact with the townspeople so far as home materials are concerned. Because he is in this favored position he will be much sought after by the manufacturers of all types of items which go into the homes, as an immediate outlet for all the materials that their war expanded facilities will allow them to produce. The lumber dealer will be the man who will hold the key to the success of many a manufacturer.

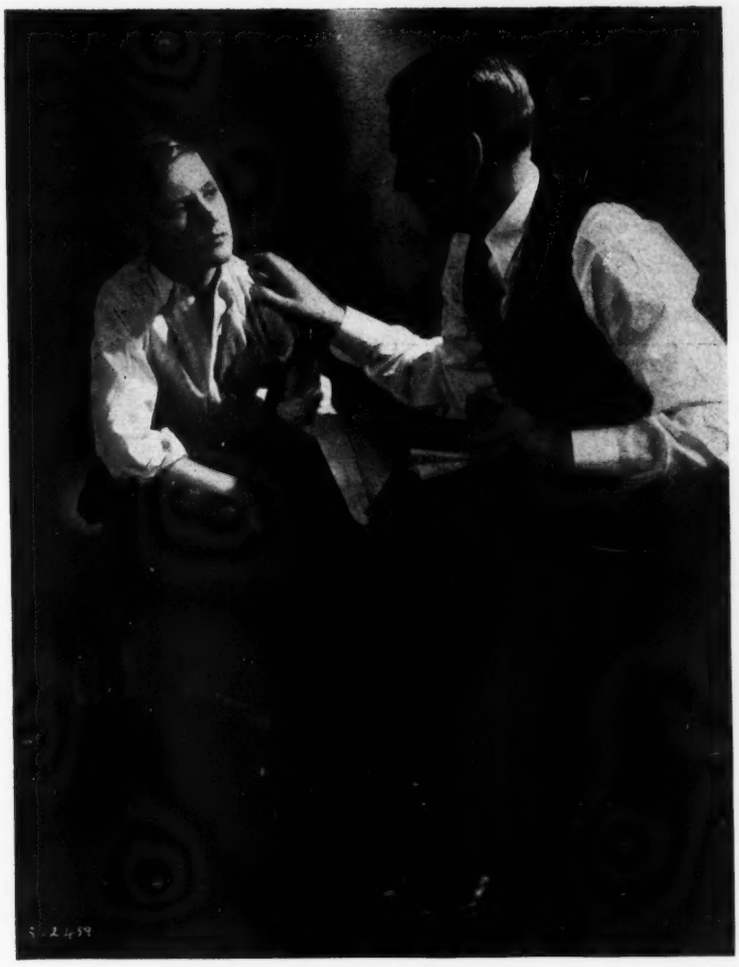
The war has brought about another significant trend which will have a bearing on the future of the retail lumber and building material business. Because of the reduction of the amount of merchandise which a lumber dealer may sell there has been an increased emphasis on the sale of service by the lumber and building materials industry. Service, as a commodity, has proven to be a profitable and a customer-luring item in the lumber dealer's stock. There is no good reason for a recession in this trend after the war. In fact, it should be ever on the increase inasmuch as labor will be plentiful. For example, lumber dealers will not only handle glass to repair storm sash. They will sell a storm sash check-up service each fall, which will include the checking over of the sash, the painting of them if necessary, the reglazing of any that need that attention, the installation of the sash in the window frames for those homeowners who do not have the physical endurance or inclination to do that job themselves.



The lumber dealer's paint department is not only going to sell paint and wallpapers, but is going to be willing to send out an expert who can advise the housewife as to what colors and what types of paint to apply on her particular walls. It is going to arrange for the decorating work to be done in the home. More and more the "package" house and "complete service" job salesmanship will be practiced. This does not mean that the lumber dealer is going to launch a campaign to run the decorators, contractors and real estate men of his town out of business. Rather he is going to ally himself with them for their mutual advantage. It is to the local contractor friend that he will turn when he has sold a contract for doing some repair work as well as furnishing the materials. It is to a local painter and decorator that he will turn when he has sold some paint and wallpaper and a decorating job as one package. In essence, then, it is going to mean that the lumber dealer is going to be the contractor's, the decorator's and the roofing contractor's chief sales headquarters. He is going to be their front man. He is going to supply the good-looking office space and the samples, and the photographs and the architectural service and the expert advice which will put the potential customers in a check and contract signing mood. He has already established himself as a source of all materials and much information for home building. He has only one additional step to travel to be the super-salesman of the home building and upkeep industry.

There is definite need for such a person in the building industry. Heretofore the merchandising end of the business has been surrounded by a hazy definition. At times the architect was the seller, the coordinator in a building project. At other times a building contractor more or less fulfilled this function. The average citizen who wanted to build a house or to repair or remodel his home was often confused as to where to turn to find the proper type of service.

This is the situation that needs to be clarified, and the lumber and building materials dealer is the man to do the job. Most other industries have their clearly defined merchandising medium. The future success of the building industry is wrapped up in the adoption of a similar set-up, and the lumber dealer is in the key position in that set-up.



Training Future Dealers to Meet Future needs

A GOODLY portion of this Anniversary issue of the AMERICAN LUMBERMAN is devoted to pointing the way to the splendid future which is going to open up for the retail lumber dealer shortly after the war comes to an end. It is not only an immediate future, but a long range future as well. It is a future which will extend far beyond the lifetime of those who are now shaping it.

The retail lumber business is today providing a comfortable living for many Americans. It is capable of doing just that for future generations. In the same manner that the tempo in all walks of life is ever increasing, the demands made upon the retail lumbermen of the future will be greater. Other articles in this book make that very clear. The lumber and building materials man is going to have to be an expert in many and sundry phases of the building business if he is going to become the coordinator of the home building business.

Therefore, it is entirely fitting that the problem of preparation and training of the youth of today to be the lumber building materials dealers of the future should have discussion in this 70th Anniversary Reference Number. Most assuredly some of the lumber dealers of the future are going to have the benefit of proper training. To meet the challenge of these skilled merchan-

Above: Prof. A. Lawrence Kocher meets with a Black Mountain College class in architecture on the sun-deck of the study building pictured below which Mr. Kocher designed and the students helped to build

disers successfully their immediate competitors will have to have similar training. The ability to absorb concentrated education is the thing that makes man unique in the Animal Kingdom. In a short time he can learn the things that it took his forebears years of experience to learn, and he can progress from that point to new and greater developments.

It is true that much of the training of youth for their future occupations will wait upon the war; but it is not too early to begin the training process of the younger brothers of the nation's fighting men. High school boys and even those slightly younger can be started on the road to being the future successful home merchandisers, today. This is the ideal time in their development to begin to shape their lives in that direction.

The boy whose father is engaged in the retail lumber business is in an especially advantageous position. He has the opportunity to observe at first hand the practical aspects of the business. He has the counsel of his father, who is experienced in the field, ever at his elbow. He is in a position to take up the torch of progress where his father leaves off.

But the fact that his father is in the business may act to deter the youth from entering that field of enterprise as readily as it may encourage him to do so. If a father is anxious to interest his son in his lumber business he must make his business methods as progressive as he knows how. Such a policy alone will make it appear to contain a challenge and a tremendous opportunity as an outlet for the young man's abilities. There are some other equations to which a father must also give attention.

First of all he must realize that the temperament of all boys is not alike. He must realize that his son's abilities may be different from his own. But he can also rest assured that in the retail lumber business there is a place for almost any type of temperament. The extrovert makes a good salesman, and can approach the public easily. The boy with artistic bent could be a boon to the business if he receives training as an architect or interior decorator. The shrewd businessman would make a good buyer, would handle the financial deals of the company wisely and well.

A father naturally has certain disciplinary duties at home in connection with his relationship with his son; how he handles these duties will determine to some extent whether or not the son will want to become further and more closely associated with his father by entering his business. The father who is the dominating, tyrannical controller of his household will find that his son is probably anxious to step out from under that control and into another business field when the time for him to earn his own living arrives, rather than to submit himself to what might be more of the paternal domination by entering his father's business.

Then the treatment around the yard when the boy does come down to help, often determines whether his experience there will develop into a real interest in the business, or whether his enthusiasm for working with his Dad will cool before he is old enough to become a real factor in it. The latter development often occurs when the boy is merely invited to come down and help around the yard and then is assigned only to throwing boards around or moving bags of cement, or maybe even being "allowed" to wait on customers. Most assuredly these are things the young fellow should do as a part of "getting the feel" of the business, even if he does them only to avoid the criticism of the rest of the employees that the boss' son never does any real work. Let the boy sweat a little but also make him feel he is really a part of the business by entrusting occasional decisions to him, and by consulting him and discussing with him the various problems which arise in the course of business. A couple of father-son lumber dealer partnerships come to mind, where the sons have reached well into their forties and have never made a decision or written a letter, or made a statement regarding the business without the old man's approval. Another example, in sharp contrast, is recalled. It is the policy of a Michigan lumber dealer father who takes his high-school age son to lumber dealer conventions, to Johns-Manville dealer training schools, and on inspection trips to other retail yards in distant towns and cities. This father enjoys having his son say to him, "Dad, so-in-so is making good by using this or that method—why don't we do that in *our* yard."

Another thing which will draw a son into his father's retail lumber and building materials business is to give him a financial interest in it. Start this policy at an early age and give him a set, small percentage of the net profits; say one percent or even less at the start.

Tuolumne SUGAR PINE

PRONOUNCED TOO-OL'-O-ME

1903-1943

Our 40th Anniversary

The mills of West Side Lumber Company, modernly equipped, manned by skilled workers, produce this choice Tuolumne Pine lumber. Their manufacturing standards meet the specifications of the most discriminating workers of wood. This company also produces fine quality Ponderosa Pine, White Fir and Incense Cedar.

We take genuine pride in the fact that the name of Tuolumne has become a symbol of satisfaction to distributors and industrial buyers in all parts of America.

For 40 years West Side Lumber Company, of Tuolumne, has been producing California Sugar Pine. From the beginning the ideals of this organization have been to maintain highest standards of quality and to give best possible service.

The great growth of this business through normal times is, we believe, convincing proof of the dependability of our lumber and of our service.

On the occasion of our 40th Anniversary we express our deep appreciation to all of our connections for their patronage through the years. When the war is won and normal times return we still will be here to serve you.

West Side Lumber Company

Tuolumne, California

SIMPSON QUALITY SINCE 1895

Sales Division of

SIMPSON LOGGING COMPANY -- (Est. 1895)

Manufacturers of Douglas Fir Lumber, Plywood, Doors, Sash, Special Woodwork.

SIMPSON INDUSTRIES, INC. -- SEATTLE, WASH.

"FAITHFUL SERVICE THROUGH THE YEARS"

The Evergreen State
OLYMPIC BRAND
DOUGLAS FIR
PLYWOOD

The best method is to have a definite, long range plan all worked out with the boy, whereby if he continues his interest in the business and continues to help in its operation, this percentage will increase as the years go by and his contribution to the business grows. The plan will give him an appreciation of the ratio of return to effort, and an understanding of disappointments and risks as well as gains entailed in business ownership. No investment will pay greater dividends.

Other fields of enterprise, engineering, architecture, agriculture, law, finance, even forestry, have for many years had educational courses in the institutions of higher learning, geared to the task of training young men for careers in their industry; but it was not until a few years ago that the first complete courses in light construction and lumber and building material merchandising were introduced into a number of American universities. In fact there has never been any really good, down-to-earth retail merchandising course offered in any field prior to this. Large retail firms such as Marshall Field & Co., in Chicago, have often complained that they had to re-educate college graduates in the ways of retail selling and merchandising practice before they were of any value to their organization.

But now a start in the right direction has been made. To be sure some of the courses as offered by some of the universities still fall short of the ideal mark in some respects. Principal shortcoming is a tendency to over-emphasize one phase of the training, such as forestry, or lumber manufacturing methods, or architecture, or high finance, or engineering, to the detriment of the course as a whole, well-rounded unit of education. Others seem to have the feel of the thing and have calculated pretty well the educational needs of a lumber and building materials merchandiser.

It is up to the lumber and building materials industry in all of its branches to do the missionary work of encouraging young men and women to enter these courses and demonstrate to the colleges and universities who have installed them that there is a demand for this type of education, and that their effort has been worthwhile. Naturally the war has put a dent in college enrollments at the present time, but boys in their early high school years can have the desirability of a career in the lumber and building materials and light construction industry so conclusively pointed out to them that by the time they are ready for college enrollment, they will be sold on the idea of preparing themselves for such a career.

Left: Two main buildings of the New York State College of Forestry at Syracuse, N. Y. Inset: Dr. Nelson C. Brown, head of the Department of Wood Utilization there

Right: Dean-elect Henry Schmitz of the College of Agriculture, Forestry and Home Economics at the University of Minnesota

Left: Prof. C. L. Mann, head of the Department of Civil Engineering, North Carolina State College

Following is a list of the colleges and universities which are presenting courses in lumber and building materials merchandising and light construction.

Alabama Polytechnic Institute

Auburn, Ala.; Assistant Dean J. E. Hannum, of the Department of Civil Engineering in charge of the course.

Black Mountain College

Black Mountain, N. C. (a few miles from Asheville); A. Lawrence Kocher in charge of the course.

Associated with Mr. Kocher, former editor of the *Architectural Record*, are the following instructors for the new courses: Anatole Kopp, recent M. I. T. graduate; G. E. Mattison, former merchandise manager of W. H. Sawyer Lumber Company, Worcester, Mass., as instructor in marketing, and H. McGuire Wood, Rochester, N. Y. and Florida builder, as instructor in building construction.

Courses of Mr. Kocher and Mr. Kopp in architecture, structural design and field work in building construction will be supplemented by classes in marketing, materials and estimating, designed to provide students with a knowledge of new materials, new methods and an acquaintanceship with problems of distribution in the building industry. The course offers special equipment to students who wish to enter the building industry as retail lumber dealers, contractors, or to engage in manufacture of building products. Special emphasis will be placed on post-war housing possibilities and the anticipated need for foreign reconstruction and the current heightened trend toward intelligent community planning. Study of new materials, of labor and time-saving methods, and the increasing trend toward prefabrication will be augmented by actual work experience along these lines.

During the summer months Black Mountain College operates a work camp in which students supplement their classroom learning with actual experience in building. The college emphasizes intensive and independent work under faculty guidance, small discussion classes, continual and informal contact with teachers, and practical experience in community living and in the subjects being studied.

University of Denver

Denver, Colo.; Dean Clem W. Collins of the School of Commerce in charge of the course.

Iowa State College

Ames, Iowa; Prof. George B. MacDonald of the Department of Forestry in charge of the course. Iowa State does not specifically have a curriculum set up in the housing and light construction field, but through its department of for-

Keystone Photo

. . . . . until he gets home again

Before he joined the Marines he had a good job. He liked his work, had been promoted twice, knew the front office thought well of him, felt his chances for advancement were good. That was his groove in the good old U. S. A.

Then came Poland and Pearl Harbor. An Austrian paranoiac with a phoney name and an oriental nation of ritualistic savages had set out to murder their way to world supremacy. This boy answered, "Not without a fight, they won't," . . . said good-bye to his job, and joined up.

Today he's standing sentinel in the South Pacific; tomorrow he'll be shooting from a fox hole; next week, attacking from a landing barge . . . a far cry from the safety of his old job and all it meant to him, but with his gun . . . and a grin . . . he's doing this job well, too.

What has our job to do with his? It has the obligation and responsibility to see that there is enough lumber to build ships to supply him; enough to package the fighting cargoes of those ships; enough to build plenty of sub-chasers and convoy escorts to protect those ships . . . in short, enough to deliver everything he needs to win.

That's the pattern cut out for the lumber industry. And, because it takes so much of all each manufacturer can produce, that's why there will be so little lumber for civilian use until we can bring him home again to take up his old job, right where he left off.

BRADLEY

(Don't forget that the more War Bonds all of us buy, the sooner we'll get him home)

BRADLEY LUMBER COMPANY of ARKANSAS

WARREN, ARKANSAS

estry it offers courses, which, when taken as electives will adequately prepare a student for a career in the retail building industry.

Massachusetts Institute of Technology

Cambridge, Mass.; Prof. Walter C. Voss, head of the Department of Building Engineering and Construction, in charge of the course. The light construction field is one option in the Building Engineering and Construction curriculum. It offers professional training in the planning, engineering, construction, management and marketing of structures and facilities required for housing or shelter. The legal and economic aspects of house construction receive full attention. Summer cooperative employment is arranged to afford the student first hand experience in the field. A splendid building materials research laboratory is a valuable feature.

Michigan State College

East Lansing, Mich.; Department of Forestry in charge of the course. The work is administered through the departments in Agricultural Engineering, Art, Business Administration, Civil Engineering, Drawing and Design, Landscape Architecture and Mechanical Engineering. The course of study was formulated after several surveys of the needs of retail lumbermen were made in all States of the Union. Its stated objective is to train young men in merchandising, knowledge of building materials, construction methods in the small construction industry, cost estimating, economics and business administration. Requirements for a degree require a minimum of six months of practical experience in some phase of the industry.

University of Minnesota

Minneapolis, Minn.; Dean Henry Schmitz of the College of Agriculture, Forestry and Home Economics in charge of the course. Chief emphasis at Minnesota is upon properties and uses of wood with fundamental courses in business administration, light construction, building materials and methods, lumber merchandising and grading, estimating, etc. included. Dr. Schmitz is president of the Society of American Foresters, and is active in the American Wood Preservation Association, a field in which he is an authority.

Prof. Walter C. Voss (left), head of the Department of Building Engineering & Construction of M. I. T. discusses types of specimens for fatigue tests of plywood adhesives with Prof. A. G. Dietz in the department's laboratory

New York State Agricultural & Technical Institute

Delhi, N. Y.; B. Klare Sommers, and the Building Construction Department in charge of the course. This is normally a two year course but has been condensed to one year for the duration of the war. No more than 22 students are accepted in the entering class each year. Classes are small and emphasize personal attention to the needs of each student. Light building construction is the subject of principal study in this course. Each year (until the war) a $7,000 to $10,000 dwelling was constructed by the students for practical experience. Graduates have had splendid occupational records.

New York State College of Forestry at Syracuse University

Syracuse, N. Y.; Dean S. N. Spring of the Department of Forestry and Nelson C. Brown, head of the Department of Forest Utilization, in charge of the course. The retail merchandising and light construction course at Syracuse includes study of lumber manufacture, dry kiln technique, lumber salesmanship, business administration, surveying and mathematics, and interior decoration may be elected. The College has outstanding laboratories where the student may become familiar with the use of all types of wood-working machinery. A dry kiln and a small sawmill are part of the campus, as are facilities for applying wood preservatives.

North Carolina State College of Agriculture & Engineering

Raleigh, N. C.; C. L. Mann, head of the Department of Civil Engineering is in charge of this course, which is a "Construction and Building Materials Option in Civil Engineering." As the name implies the course leans considerably toward its engineering aspects with other subjects concerning building materials and architecture and business procedure included. The curriculum was organized after consultation with men engaged in the business for which it is training young men.

University of Wisconsin

Madison, Wis. The first year contains much of the general material that freshmen in engineering undertake. In the advanced years, more courses in engineering and some in business administration are included. The facilities of the Forest Products Laboratory are helpful to students at Wisconsin.

Mason-Abbott Hall, dormitory for men at Michigan State College, East Lansing, Mich.

DESIGN FOR MERCHANDISING

A lumber yard store that approaches the sale of all that goes into the house from merchandising standards!

A corner location is assumed. This should be on a main street along with other stores. The lumber yard may be at the back as shown or may be entirely separated as to location if railroad or available property restrictions necessitate, in which case the drive or alley service area, with space for parking, would be retained.

The women's department, for wallpapers, furniture, small cans of paint, bath accessories and all the other items that can seasonally or continually interest the women, is placed out on the corner in full prominence. The interior can be readily seen from the street and no one would hesitate to enter. A woman should be in charge of this section. The openness of the plan and the relation of the building to the outdoor displays would make for free circulation of the customers into the building or outdoor displays. The angle at which the women's wing is placed leads people into the front entrance almost automatically, and also opens the outside display area to a view from the main street, though a view of this can be had right through the women's section which is all glass walled.

The exterior display would have garden furniture, small chicken houses and rabbit hutches, flower boxes and all the other items that are hard to display to advantage inside. In inclement weather the entire display can be seen readily from inside or from the shelter of the canopy which runs along the windows for the building. A shade tree and some planting softens the glare of sun on the pavement and makes this a truly inviting place to shop.

The interior departments are arranged in sequence. For instance the paint section is next to the make-it-yourself section, which is next to the tool section, which is next to the hardware section, making the sale of related items easy.

Special display cabinets and devices have been designed to show doors that actually operate, as people like to swing them, and shingle panels that can be shown at the angle of the roof over a wall panel which shows the combination of one with the other. Many people want a piece of moulding or some lumber but do not know just what it is called, or they merely want some item to solve a problem they have. The lumber department has samples of all the lumber yard items displayed out where the customer can browse until he finds what he wants. The same is true with the hardware displays.

The office is open to a view of the whole store for supervision and bills may be paid at the counter.

A special room for the use of contractors, with a special show window to display items they would be primarily interested in, is provided. Large tables are provided so they may take off plans and do their figuring. Files of building materials are provided for their use. The office also has a counter opening to this room so the contractor need not enter the main store to transact business, but should he want to, the entrance is handy.

The private office is handy to this contractors' room, and a lavatory is provided. The scale beam is in the outer office with platform just outside the large window.

A stock room is provided for paints, hardware and small items, with extra space in the basement. A platform for delivery and receiving is handy. Stocks of lumber and millwork items, and other larger items would be kept in the yard buildings and orders filled from there.

The show windows are shaded and lighted inside by natural and artificial light to prevent reflections. Corrugated transite awnings, adjustable by cranks, are used on the front windows, while the dotted lines represent trellis overhangs and canopies for protection from sun and rain.

An exterior island showcase is placed at the sidewalk near the main entrance, and dignified signs are placed both for distant view and for the attention of the passersby.

This is a building to compare with the most modern department store. Surely the dealer who sells building materials should himself be preeminent in the use of them for his own building needs. The position of the dealer in his community demands that he give dignity to his business quarters just as other merchants have done. The new dealer store can not be "just another building." It must serve its purpose efficiently, with utmost distinction.

Key to Sales Areas

1. Make-it-yourself items, unpainted specialties.
2. Paints, varnishes, stains, brushes, putty, etc.
3. Floor coverings, linoleum, wood, asphalt and rubber tile, with chairs and mirrored corners to show appearance of material on the floor.
4. Tools, including power home workshop tools.
5. Glass and mirrors.
6. Cabinets, breakfast sets, mantels, etc.
7. Plywoods.
8. Wall boards and tile boards.
9. Doors, storm doors, screened doors, displayed in pull-out frames so they may be operated.
10. Exterior wall materials and roofing materials, in cabinets arranged so they may be hung up to show different combinations.
11. Insulation materials, displayed as installed with glass panels showing cut-away section.
12. Samples of lumber and mouldings, displayed so novice can tell what he wants without knowing the proper name.
13. Builders hardware, including packaged nails and screws.
14. Full size house wall for display of windows that work.
15. Wallpaper display with seat for perusal of samples.
16. Island display cases for seasonal or special sale items.

On the reverse side of this sheet is a list of items which can be sold by the lumber yard store. Different localities, and competition, will determine which are most profitable for any dealer. The store layout suggested will have to be varied for such changes in stock and display requirements that the needs suggest.

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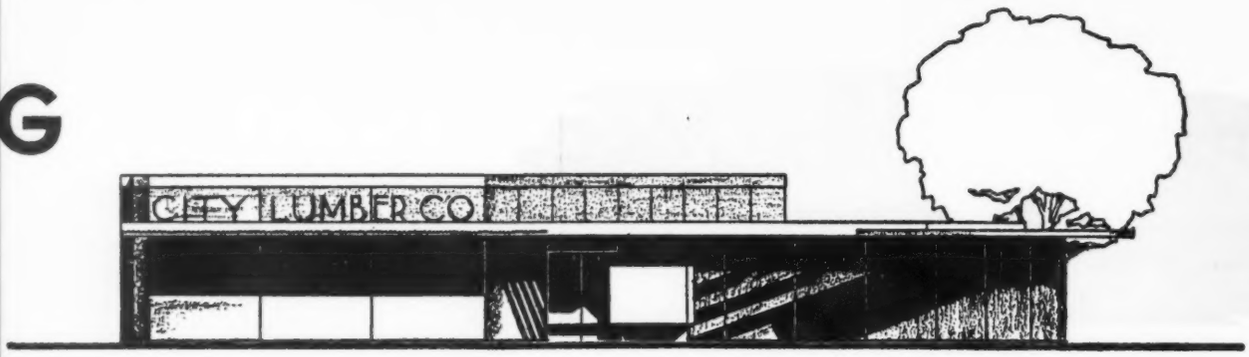
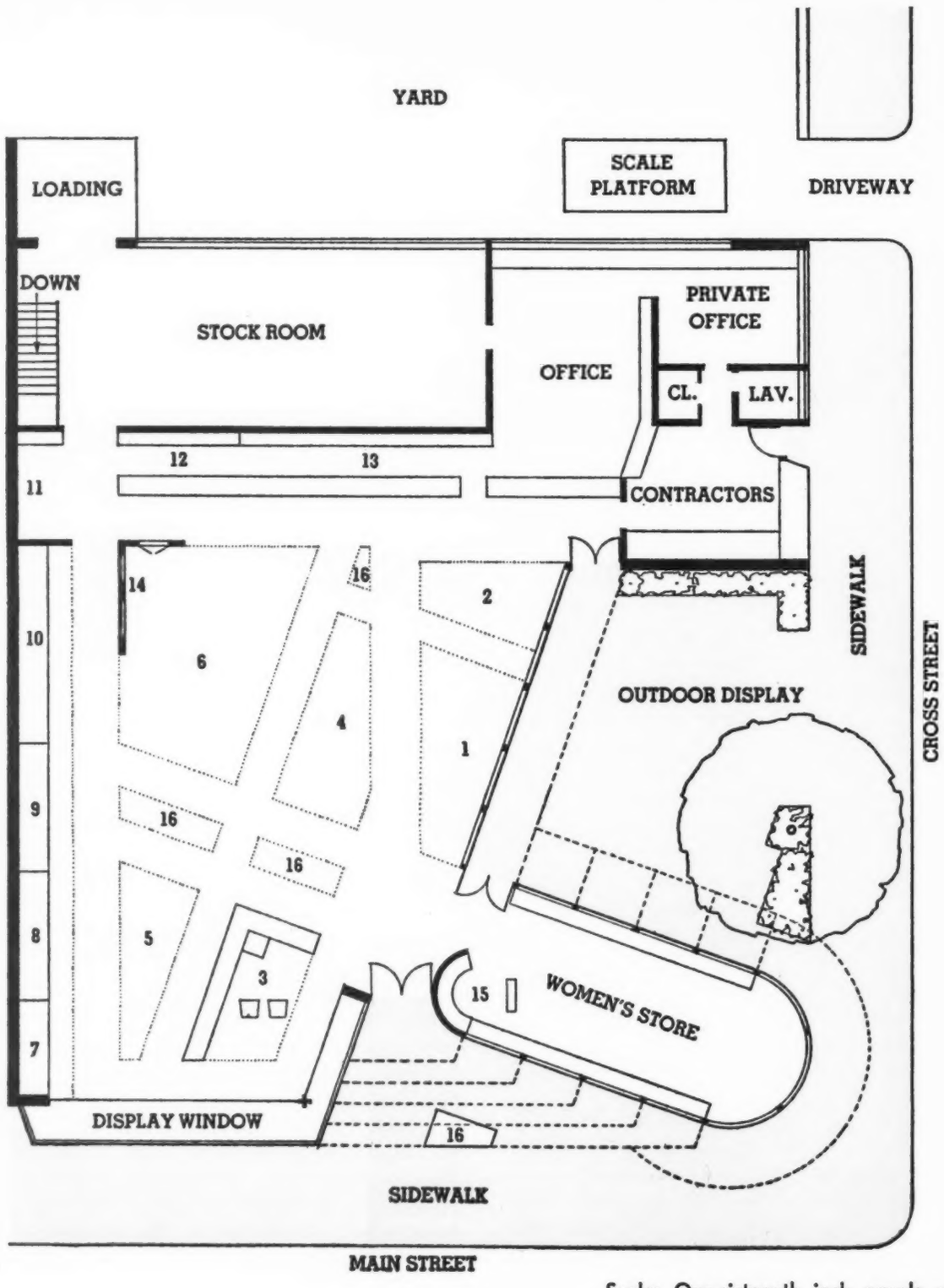




Scale: One-sixteenth inch equals one foot

Items Sold by Modern Lumber a

Asbestos roofing products
Asphalt roofing products
Arbors
Acoustical plaster
Aluminum paint
Animal dips for sheep and hogs
Asbestos board
Asbestos marble panels
Ash sifters
Ash dumps
Ashpit doors
Ash traps (fireplace)
Asphalt felt
Asphalt filler
Asphalt paint
Attic stairways (disappearing)
Attic sash
Attic windows
Automobile glass
Awnings
Awning hardware
Air conditioning equipment

Boat lumber
Boat paint
Brick (common)
Brick (face)
Balcony rails
Barb wire
Barn doors
Barn equipment
Barn door hardware
Batteries (flashlight)
Barn paint
Barn sash
Barn siding
Basement windows (wood)
Basement windows (steel)
Bathroom tile
Bathroom cabinets
Bevel siding
Binder twine
Bird houses
Boiler compound
Bolts
Brick surface paint
Brooder houses
Barn brushes
Builders hardware
Building paper
Built-in furniture
Buzzers
Barn door hangers
Bath tubs
Bench tops
Balsa wood
Block flooring (wood)

Cedar closet lining
Cedar chests
Cement
Corner cupboards
Cement anchors
Chimney caps
Chimney scrolls
Chimney doors
Coal stokers
Chisels
Chicken wire
Cement bird baths
Cement blocks
Canoes
Coal
Chicken houses
Calcium chloride
Canoe enamel
Carpets
Carpeting
Carpet lining
Casement hardware
Cattle feeders
Cattle guards
Caulking compound
Cement floor hardener
Cement paint
Chandeliers
Charcoal
Closet equipment
Clothes dryers
Clothes hampers
Clothes baskets
Clothes poles
Clothes line posts
Coal chutes
Coal doors
Cold frames
Column bases
Cowbells
Crating strips
Creosote oils
Curtain rods
Curtain poles
Copper nails
Clothes racks
Corner brackets
Corner braces
Copper tubing
Calcimine
Combination doors

Decorative insulating boards
Doors
Disinfectants
Door bells
Door chimes
Dampers
Decalcomania
Dampproofing
Door checks
Disappearing beds
Dog kennels
Dowels
Drawing boards
Drain tile
Downspouts (sheet metal)

Exterior paint
Enamel
Electric heaters
Electric light bulbs
Electric grills
Electric fixtures (lighting)
Electric fireplace grates
Electric saws
Emery cloth
Electrical conduit
Electric lamp cords
Electric plugs and sockets
Electric flashlights
Enameled table tops

Floor finish
Floor wax
Furniture wax
Fencing (wire for farms)
Fencing (yard and garden)
Fence posts
Flower boxes
Flooring
Fireplace hardware
Fireplace andirons
Fireproofed lumber
Fireplaces
Flush doors
Folding doors
Fertilizer
Feed (cattle)
Fire brick
Fuel briquettes
Floor brushes
Floorsanding machines
Farm gates
Files
Fir gutters
Fireplace screens
Fire brick cement
Fireplace baskets
Fireplace logs
Flag poles
Flags
Flag stone
Floor ventilators
Floor heaters
Flower pots
Flower seeds
Farm tools
Furnaces
Furnace pipe
Flashing
Floor tile
Fillers

Garage doors
Garage door hardware
Garden furniture
Garden arches
Garden benches
Gates (farm)
Glass (window)
Glass block
Garden tools
Gutters (sheet metal)
Garbage cans
Garbage receivers
Grates
Grass seed
Gable louvre frames
Glass substitutes
Glass wool
Garden seeds (vegetable)
Garden sprays
Gas heaters
Glass cutters
Glue

Hydrated lime
Hog houses
Homes
Hack saws
Hair plaster
Hardwood flooring
Hayracks
Hog feeders
Hog rings
Hose (garden)
Hose nozzles
Hotbed sash

and Building Material Retailers

Hotbed frames
Handicraft lumber
Household appliances
Hammers

Interior paint
Insulation
Industrial alcohol
Ironing boards
Ice boxes
Incinerators
Insect destroyers
Incubators

Kitchen cabinets
Keene's cement
Kindling wood
Knotty pine
Kitchen sinks
Kitchen assemblies

Linseed oil
Lumber
Linoleum
Linoleum cement
Ladders (step)
Ladders (extension)
Lockers
Locks
Lacquers
Lattice strips
Lawn sprinklers
Lawn umbrellas
Lawn mowers
Lawn swings
Lawn tents
Lead head nails
Lighting fixtures
Lightning rods
Liquid fiber cement
Log siding
Lavatories
Lawn furniture
Lanterns
Lime sprays

Mirrors
Medicine cabinets
Moulding (wood)
Moulding (metal)
Metal lath
Mouse traps
Mail boxes
Mortar colors
Magnesite stucco
Mantels
Mason's lime
Milk pails
Mirror doors
Mason's supplies
Mason's cement
Metal corners
Metal corner bead
Motor driven tools
Motor driven woodworking machines

Newels
Nails

Ornamental glass
Oil burners
Oakum
Oars
Oil cloth
Oil stones
Outhouses

Pergolas
Plaster
Posthole augurs
Plywood (softwood)
Plywood (hardwood)
Poultry houses
Package receivers
Paint sprayers
Patching plaster
Pipe fittings
Pipe
Plaster of Paris
Porch swings
Paint remover
Paint
Plumbing equipment
Plumbing fixtures
Plumbing connections
Poultry equipment
Poultry netting
Porch furniture
Paint brushes
Pressed Boards

Quick lime

Red cedar shingles
Radiators
Radiator valves
Row boats
Radiator covers
Rope
Refrigerators
Radiator enamel
Radios
Rakes
Range waterers
Rat traps
Reinforcing iron
Roof cement
Roll screens
Rubber door mats
Rubber tile
Refuse burners

Stained wood shingles
Shingle stain
Screen cloth
Screen paint
Storm sash
Storm sash brackets
Storm doors
Sheet metal roofing
Sliding doors
Stair rails
Screws
Shelf brackets
Sewer tile
Sand
Sandpaper
Saws
Sash weights
Sash cords
Sash balances
Stoves
Stains
Stools (bathroom)
Sash pulleys
Surveyor's stakes
Sand boxes
Sash chain
Septic tanks
Shellac
Shovels
Shower heads
Snow fence
Soil pipe
Solder
Spray pumps
Stove pipe
Stove enamel
Stove polish
Sweeping compound
Sinks
Steel sash
Screw drivers

Trellisses
Toxic treated lumber
Tool chests
Tacks and brads
Termite preventitive
Turpentine
Tape (friction)
Trim
Tape (mending)

Unpainted furniture

Venetian blinds
Ventilating fans (attic)
Ventilating fans (kitchen)
Vacuum sweepers
Veneer
Vises

Wall tile
Wallboard
White lead
Window screens
Weatherstrip
Windows
Waterproofing compounds
Waterproofing cement
Water heaters
Waste baskets
Work benches
Wood lath
Wall tint
Wood preservative
Wood patching compound
Wagon boxes
Washing machines
Watering tanks
Water pipe
Wagon grease
Wall board fasteners
Wallpaper
Water softeners
Water systems
Weather vanes
White sand
Whitewash
Wire stretchers
Wrought iron pipe
Wax (floor)

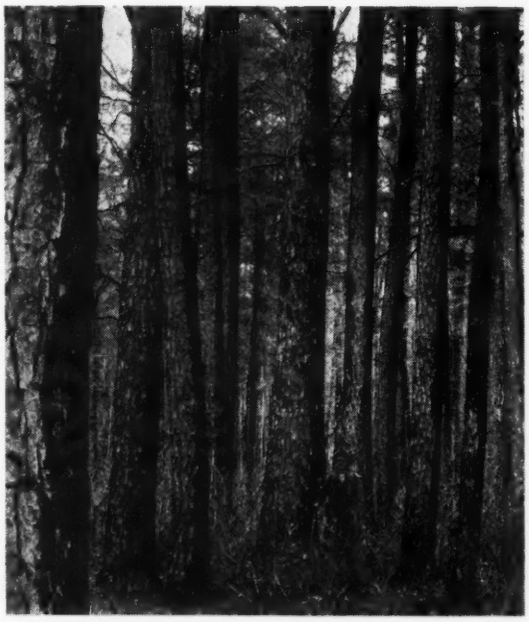
Now in Our 60th Year

THE BONNER lumbering operations in Montana started with a portable mill in 1884. Two years later the mill shown above went into operation, sawing its first log June 6, 1886. The picture at the right shows the great Anaconda plant today.

The first sawmill at Bonner established in 1884, cut less than 30,000′ a day. The modern Anaconda plant cuts that much per hour—220,000′ of Ponderosa Pine in an 8-hour shift.

ANACONDA COPPER MINING CO.
LUMBER DEPARTMENT
BONNER MONTANA

CROSBY— *a Sustained Yield Operation*



The Crosby program of reforestation and selective logging of its large tracts of Mississippi Shortleaf Pine insures a permanent supply of timber to keep even with year-to-year cutting. Crosby is a good organization to depend on for your post-war requirements.

Shortleaf Pine
Hardwoods—Oak Flooring
Treated Poles, Piling, Lumber

Crosby Lumber & Mfg Co., Crosby, Miss.

American Lumberman on Parade

By Elmer C. Hole

THE OLD *Northwestern Lumberman* was founded by a life insurance agent who had come from New York to Michigan to sell life insurance to lumbermen. He was W. B. Judson, born in 1849 in Chautauqua County, N. Y. Because of his mother's death in his early childhood he was raised by an aunt, on a farm in western New York State. Mr. Judson worked his way through school and received his higher education at an academy in Syracuse. After finishing school, when he was about 18 years old he taught school for two or three terms. Then he became a life insurance agent. His company thought it would be a good thing to insure the lives of lumbermen—men who were in a dangerous business—cutting down trees and sawing it into lumber, so they sent their young agent to Michigan.

Mr. Judson was very successful in selling insurance to these lumbermen. He built up a wide acquaintanceship not only with the owners but with the workers. As he went from sawmill to sawmill the lumbermen would ask him what the lumber mill at his previous visit was charging for their lumber. "How much is he getting for it? What is the market price?"—and he became sort of an information agent as he went from mill to mill. It widened his acquaintanceship and strengthened his friendships because he had the happy faculty of putting down and remembering details, and by relating these to his prospective customers it helped him in the sale of insurance policies. One day he met a prominent lumberman in Michigan who said to him "Why don't you publish a newspaper? Why don't you get out a price current—something that will give us the prices?" That set him to thinking.

He was then living in Saginaw and there was a man there who was publishing a little paper called the *Lumberman's Gazette*. Mr. Judson went in and made an arrangement with him whereby be bought the *Lumberman's Gazette*. He published two or three issues in Saginaw, mostly on credit, and after

E. C. Hole *NEEDS LITTLE introduction to those whose connection with the lumber business spans any length of time. His period of active service to the* AMERICAN LUMBERMAN *extended from* 1897 *to the Spring of* 1942. *For* 36 *of those years he was general manager, secretary, and guiding head of the organization. During that time he traveled considerably, and because he always had a new idea or scheme for the betterment of the lumber and building industry he was in constant demand as a convention speaker.*

Mr. Hole has indeed, a creative mind, and though he would not come out and say so himself, all but a few of the industry boosting programs mentioned on these pages as being the creations of the AMERICAN LUMBERMAN *were products of his thinking.*

It is also interesting to note that during the years when the AMERICAN LUMBERMAN *ownership was divided equally between two men Mr. Hole's single share of stock was the one which tipped the balance of a decision either one way or the other and made his judgment the deciding factor whenever there was a difference of opinion between the two owners. It is not difficult to understand why the names* AMERICAN LUMBERMAN *and Elmer Hole were practically synonymous throughout the industry for so many years.*

—THE EDITORS

looking over the field he concluded that Chicago was the place for him to publish his paper.

Chicago at that time, in 1873, was growing very rapidly. It was being rebuilt after the big fire, and the lumbermen in Michigan, Minnesota and Wisconsin were shipping great quantities of their products to Chicago because it was really the lumber market of the United States. The lumber came down in boats — was unloaded alongside of the river. Both branches of the Chicago River had large and numerous storage yards. The market for the lumber was Lake Street and the Lake — that's about where Clark Street is now. Entire shiploads would be sold at so much per thousand feet—take it as it came, boards, 2 x 4s, and all kinds of lumber all at one uniform price.

Mr. Judson got his printing press loaded on the boat and shipped to Chicago but some one to whom he owed a debt got out an attachment and would not allow him to take the press off the boat until the debt was paid. Armed with a dummy of the paper he wanted to print Mr. Judson tramped around Chicago and sold a large amount of advertising to wholesalers located there, cash in advance. That enabled him to settle the attachment and claim his printing press.

The lumber business in Chicago at that time was one of the biggest businesses here. There were a good many more men engaged in the lumber business in Chicago at that time than there are now. It was stimulated by the railroads. The Northwestern, the Rock Island, the Burlington and other western roads running out of Chicago gave favorable lumber rates to purchasers of lumber to be sent out into western territory that was being settled by the return of soldiers from the Civil War. Those who had gone to Kansas and Nebraska, taking up homesteads, had to have little shacks in which to live. Retailers would come in and buy trainloads. That was the beginning of line yards. In fact it was one of the things that started the line yards —the railroads wanted lumber yards in their towns and they gave lumbermen free yard room. In addition the railroads gave a rebate, the amount depending upon the number of cars in the train. It was no uncommon sight to see trainloads of lumber leaving Chicago every night during the building season.

Mr. Judson was an energetic man—he was a very clever writer and he had the happy faculty of listening to conversation and then be able to write down the essential facts in a very few words and in an interesting way.

There were no grading rules for lumber then in use. Mr. Judson started the printing of grading rules; in fact, he was the first to compile and publish such rules. George W. Hotchkiss, was a Michigan product who worked for sawmills and in the lumber business and came to Chicago as a young man to go to work as a clerk in the lumber market. He put down the prices of lumber that was sold by the boatloads. Then he got so he could sort lumber and sold it for the different purposes then common: siding, flooring, finish, dimensions, etc. Mr. Judson hired Mr. Hotchkiss to write the first set of grading rules that were published in the city of Chicago.

He afterwards sent Mr. Hotchkiss to North Tonawanda, N. Y. to gather and study some rules that were governing lumber shipments there. A great deal of lumber went down the lakes to North Tonawanda and was loaded on to canal boats and shipped down into New York State. The North Tonawanda rules were accepted by all of these dealers as their authority on grading. Mr. Hotchkiss went from North Tonawanda to Boston and gathered up the rules that were enforced in that town. Later these rules were published in what was known as the Lumberman's Handbook. Thousands of copies of this book were sold throughout the early history of this publication.

Mr. Judson gathered about him on his staff some very able men. Among others was E. C. Chandler who wrote the markets and the tendency of the trade. He was an old State of Maine man—was thoroughly familiar with the lumber business in that territory. He came to Chicago because of Horace Greeley's advice to "Go West Young Man" and in looking for a job he wrote a letter to Mr. Judson as a publisher and told him he knew all about the lumber business, and as a result of that correspondence he was in the employ of the *Northwestern* and the AMERICAN LUMBERMAN for more than 25 years, as a chief editorial writer.

Another able man on the staff was Met L. Saley. Mr. Saley was born and raised in the territory near where Mr. Judson was raised. They knew each other as boys. Mr. Saley was an artist in more than one sense. He could draw pictures —not only with a crayon but word pictures as well. He made for himself a job in going all over the country lecturing before Chautauqua associations and other gatherings, illustrating his talk as he went along with crayons, something after the order of Bill Nye. Mr. Saley was a humorist also. Mr. Judson persuaded Mr. Saley to write stories regarding the lumbermen he met. As he went into a town to give his illustrated lecture he would visit the lumbermen and

J. E. Defebaugh

W. B. Judson

write a story for the *Northwestern Lumberman*. His title was "Salamagunda." Mr. Saley wrote those articles under that title for a number of years and then finally he established a head known as "The Realm of the Retailer."

In order to bring a little fun and humor into his articles he talked about his Black Cow, which he never owned, and his Jay Eye See Horse, which he never owned. When he would go into a lumber yard the lumberman would ask him about how his horse was getting along—had he been beaten at any races and if his cow was still giving milk. One of the stories that Mr. Saley used to tell was that his black cow ate green grass and gave white milk. Thousands of lumbermen all over the U. S. remember him as a genial chap, as a good story teller, as a man whom you could always enjoy listening to because there was a freshness about his stories and his information that was enticing, interesting, instructive and helpful.

Leonard Bronson who joined the *Northwestern Lumberman* as a young man was a very able and thoughtful student on lumber affairs. He saw the development of the lumber business—he saw the future of it as a young man. He continued in the lumber writing business all his life. He became a member of the AMERICAN LUMBERMAN staff and later was secretary of the National Lumber Manufacturers Association. Mr. Bronson was a better judge of a dinner than any man I ever knew. He truly enjoyed eating and he knew all of the best dishes and knew how they were cooked and how they should be served. He knew all of the fine eating places in the city of Chicago and other cities also. There was a very splendid eating place on Adams Street in Chicago known as Kingsleys. All of the youngbloods of the city ate there in those early days. Leonard Bronson usually was at a table of lively young fellows—later he was at another very famous table where lumbermen gathered in the old Haufbrau. He was much sought after as an evening guest wherever he went because he always had a fund of information on most all of the current subjects of the day.

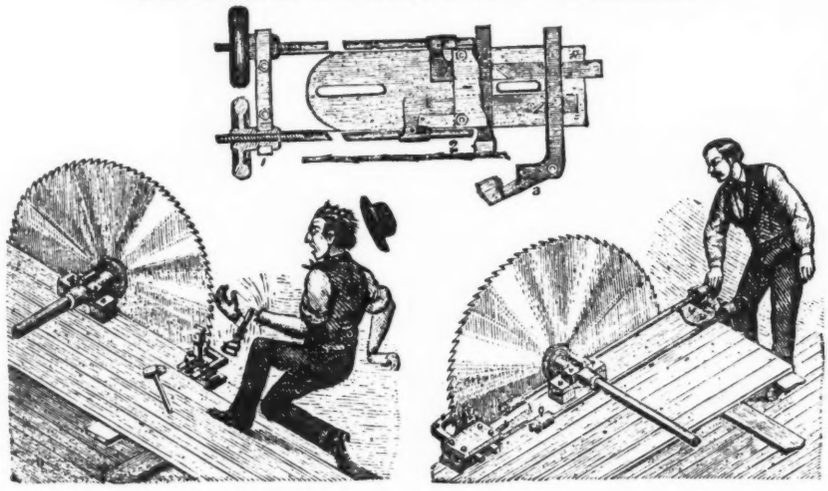
The *Northwestern Lumberman* continued to flourish. It grew in income—it grew in circulation and importance to the trade—it claimed that it was first in every good thing for the industry.

Mr. Judson was the springboard from which retail lumbermen's associations started. He advocated them in his publication—he found active young men in the industry and encouraged them to start associations. He and Mr. Schuck and other prominent Illinois lumbermen started the first Illinois Lumber Dealers Association. W. G. Hollis of Minneapolis, who was a lumber salesman, helped Mr. Judson start the Northwestern Retail Lumber Dealers Association. It would take a good deal of space to cover all of the associations that were inaugurated and instituted by Mr. Judson. He was friendly to the association idea—he believed it was a good thing for the manufacturers as well as for the retailers. He felt there were subjects that each one should be discussing together.

It was the AMERICAN LUMBERMAN which suggested to the manufacturers in the north, as their timber began to vanish, that they investigate the possibilities of the West Coast and of the Southern pine. In the early 1880's and 1890's, as the northern trees began to become more scarce, some of the northern operators went south but they did not flourish so well in the South because there were labor conditions with which they were not acquainted. Negro problems, the climate and conditions were so different that many of them gave up. But the most of the West Coast lumbermen came originally from the northern states of Michigan, Wisconsin and Minnesota.

Northwestern Lumberman was one of the first publications to advocate sustained yield forestry. Many were the articles printed in that paper calling attention to the need of counteracting the propaganda that was being printed over the country by sensational writers regarding lumber barons — how they cut the trees and left nothing but the blackened stumps. In all of these years the *Northwestern Lumberman*, under Mr. Judson's leadership, called attention to the fact that the lumber that was cut off of those areas was used to build houses—homes for citizens who were settling on the prairies, and that lumbermen were serving the country in a profitable and patriotic way, reminding the rabble shouters that there was something good being done for the country that they had overlooked talking about. Mr. Chandler, the editorial writer, called attention to the fact that the farmer who depleted his soil was as guilty as the lumberman who did not leave any seed tree.

J. E. Defebaugh was born in 1853 near Williamsport, Pa., one of the towns they used to call Pennsylvania Dutch. He too was encouraged to move out into the West by the current agitation that the West was the coming country; so he came to Chicago. He began as a printer, working on the old Chicago *Times*. He wanted to be a publisher. He was a member of the then youthful organization known as the Y. M. C. A. and because that group wanted a publication they suggested to him that he


Ferry's Circular Saw Guides.
THE MOST IMPORTANT INVENTION
Pertaining to the Manufacture of Lumber with Circular Saws Ever Presented to Lumbermen.

This Advertisment Appeared in 1876

SPECIAL MERCANTILE AGENCY FOR LUMBERMEN
THIS BOOK
REFERENCE BOOK OF THE LUMBERMENS CREDIT ASS'N.
CONTAINS A COMPLETE LIST OF WHOLESALE AND RETAIL DEALERS IN LUMBER, SAW & PLANING MILLS, SASH, DOOR & BLIND DEALERS & MANUFACTURERS, WITH THEIR CAPITAL & CREDIT RATINGS.
NEW ENGLAND & EASTERN EDITION
WESTERN EDITION
COMBINED EDITION
LUMBER COLLECTIONS A SPECIALTY.
IN WRITING, MENTION THIS PAPER
Lumbermen's Credit Ass'n,
ESTABLISHED. 1876
CHICAGO ILL

Reproduction of ad published just before the turn of the century

start a paper, which he did, and called it the *Young Man's Era*. He continued to publish it for a number of years. It was the official publication of the Y. M. C. A. in Chicago.

Going about the city, getting news for his publication Mr. Defebaugh became acquainted with lumbermen. He thought he saw a fertile field for another publication and he started the *Timberman* in 1888. He was a very active, energetic man, a good mixer, made friends and was always on the move. He gathered about himself some men of like temperament and soon he was publishing a very creditable magazine in competition with the old *Northwestern Lumberman*. Among the talented young men who were associated with Mr. Defebaugh was one who combined advertising ability and writing of very interesting articles known as "Travelogues" — Bolling Arthur Johnson.

He it was, with the assistance of some old lumber friends, who gave birth to "Hoo-Hoo" at Gurdon, Ark., fifty odd years ago. The spot is marked with a suitable monument to this organization, whose symbol is the black cat. This organization grew by leaps and bounds. It was sometimes called the playground of the lumber trade. Every convention held would, at some place in the session, have a place on the program for a concatenation—an opportunity to initiate some new kittens. This concatenation gave an opportunity to work off some jokes and pay back some old scores. You had a world of fun and there was good humor in it. Mr. Johnson was recognized as the founder and honored Snark of the Universe. He greatly enjoyed this distinction. During the period of the depression the organization lost a great many members but lately it has been reorganized and is now doing a missionary work of promoting the building business of the lumbermen, encouraging the building of homes and like services.

Bolling Arthur Johnson was a large man, with black hair and heavy black mustache. He had a good voice and he loved to join in with a barber shop quartet. Many will remember him at the conventions. He always came in late—after the convention had gotten under way. He had a nice black coat, black suit usually, and carried a cane and a grip. He would walk down the aisle of the convention, up to the news desk at the very front, take off his coat, lay down his hat and lay his cane on the table with a good deal of noise, then look around and ask the rest of the boys what had been going on. He thought that he was a great photographer and he took a great many pictures—some good and some not so good, but he didn't like to have any one tell him that any were not so good.

He was known to all the lumber manufacturers in the South and was invited to their homes. He became a sort of an institution. Later, after the death of Mr. Defebaugh, he severed his connection with the AMERICAN LUMBERMAN and started a paper of his own called the *Chicago Lumberman* and often very affectionately referred to the AMERICAN LUMBERMAN as "the old lady of Dearborn Street", which he was sure wouldn't last very long after he left its service. Mr. Johnson and his publication have long since passed over into their reward.

The *Timberman* staff was very active. Its chief aim was to build up an organization and a publication that would outshine the *Northwestern Lumberman*. They were successful in interesting a large number of young men in their publication and there were many fights between these two papers within their own pages. In 1898 a lumberman from Cairo, Ill., Mr. F. E. Creelman, who was a subscriber to both publications, came to Chicago and succeeded in getting the two publishers together. He showed them the foolishness of the scrap that they were engaged in and he said to them "Why don't you consolidate?" As the result of that interview they did get together and on January 1, 1899, they consolidated the two publications under the name of AMERICAN LUMBERMAN. Mr. Judson was the manager, Mr. Defebaugh the editor. Mr. Defebaugh traveled a great deal all over the country. He took with him his private secretary, M. M. Marsh. He was a prolific writer and he gained an enviable reputa-

This advertisement appeared in April 1897

tion by interviewing lumbermen everywhere. He saw to it that he was interviewed by the local newspapers. He attended every convention it was possible for him to attend, and he was on the program of many of these conventions. AMERICAN LUMBERMAN continued to grow in strength and influence.

In 1901 occurred the famous Chicago Convention. It was held in the Congress Hotel. It was one of the outstanding conventions of the lumber industry. Mr. Defebaugh was toastmaster. Lumbermen were there from all over the United States. Each section of the country and each specie of the lumber industry was represented. There was a long list of speakers. I recall that one of the great speeches—one of the longest and most full of interesting statistics, was made by R. A. Long of Kansas City. Many of you remember Mr. Long, a tall, slender man—he had a habit when he quoted figures of reaching up with his right hand, pulling his right ear and quote a lot of figures. He would talk on that a little while and then he would reach up with his left hand pull his left ear and quote some more figures. He continued to do that throughout the speech.

As I said, Mr. Defebaugh was the toastmaster. I sat at a little table down in front of the speakers' rostrum, acting as a messenger boy for the toastmaster. There were all kinds of things to eat at that table, and also to drink. When it was over I went to the cloakroom to get Mr. Defebaugh's plug hat and his overcoat and he said to me that he was sort of sick and wished I would walk along with him, which I did. In a few minutes he said that he was going to vomit, which he did, and it so happened I was holding his plug hat, a most convenient receptacle, and he vomited into that hat. Of course that put the mess all in one place.

AMERICAN LUMBERMAN did a great deal in an educational way for the lumbermen by writing illustrated stories of their operations. These articles stimulated improvements in manufacturing. It gave the proprietors an opportunity to see the other fellows' plants without going to the mill itself. There were many new inventions, new machines, new methods of handling and logging, all of which were helpful to the entire industry.

The AMERICAN LUMBERMAN was the first publication to print the annual statistics of the cut of lumber each year. It performed a great service to lumbermen—it sent out questionnaire blanks and cards to all the mills in all sections of the country and the first four issues each year contained the amount of lumber cut in each section and the prognostications regarding the prices and the supply and the trend of the market for the coming year. The annual review was one that was much sought after—the Government used it in its statistical reports. Later, however, the Government found it was so useful that they incorporated it in the Commerce reports and since then the AMERICAN LUMBERMAN discontinued it. It was not only a labor of love—it was a very expensive proposition, but greatly appreciated by the lumber trade itself. It was one of the outstanding services of this publication to its industry. AMERICAN LUMBERMAN was always the champion of the lumber industry.

In 1906 there was an important change in AMERICAN LUMBERMAN, in its management.

For several years Mr. Defebaugh had been gathering material for an authoritative history of the entire American lumber industry. He was asking all of his friends and acquaintances throughout the nation to send the paper all the mate-

rial they had, or could come in contact with, or that they could gather up or could find out about the establishment of the lumber business, with reference to the species, amount of lumber cut, men that were engaged in it, and all other materials that would be helpful to provide a history that would be of the sort in which lumbermen would be interested. The result was that the office had a whole room full of material. Mr. Defebaugh engaged a man to codify all this material. He hired proofreaders and he spent on an average of about $10,000 a year on the work of publishing two volumes of history of the lumber business.

They soon found out that there was no market for such a book. The sales were limited. Mr. Judson did not wish to continue. Mr. Defebaugh did wish to continue. It was estimated that it would take another five years to complete the work. Mr. Judson wished to retire. Mr. Defebaugh wished to continue. So after many conferences it was agreed that one or the other would sell out. The agreement provided that on a certain day they would each submit a proposition to the other. About 11 o'clock on the day agreed they came together in Mr. Judson's office. Each had his proposition. It was agreed that they would lay their offers down on the table with each man's left hand on his proposition, and one was to take his hand off and show his offer to the other. Then if the man to whom it was offered declined he would then take his hand off his proposition and submit it to his partner. The question was which one would take his hand off first.

Mr. Judson said: "I am the oldest, I'll take my hand off," which he did. He had offered to buy Mr. Defebaugh's one-half interest for $250,000 or sell his one-half interest for $250,000. Mr. Defebaugh picked up the proposition and said: "Jud, how long will you give me to make a decision." Mr. Judson answered, two hours. At the end of two hours Mr. Defebaugh declared that he would buy it and he proceeded to get together the money and securities to bind the bargain. No one ever knew what Mr. Defebaugh's proposition was. It was not necessary inasmuch as Mr. Defebaugh had bought his partner's interest.

Mr. Judson retired and went to live in Seattle. He loved the Pacific Coast and died there in December, 1911. Mr. Defebaugh was if possible, even more active than ever. He was constantly on the go —kept two stenographers busy— always working for the interest of the lumber trade. He made frequent trips to Washington as a witness on the Tariff Bill, which was then under consideration. In 1909 he was stricken with an incurable malady and died in November, 1909. The paper was continued under a Trusteeship until 1920 when the ownership of the property was turned over to his son. It then continued under the guidance of the same management until 1942, when it was sold to the Vance Publishing Company. Herbert A. Vance, president. The AMERICAN LUMBERMAN continues to be the leading publication in its field in America.

Frederick Weyerhaeuser

One of the outstanding things about the AMERICAN LUMBERMAN is its subscription list. Subscribers of 40 and 50 years record are no unusual thing. I venture to say that the AMERICAN LUMBERMAN has upon its list more concerns who have been readers of this paper for a longer time than any other publication in America, and taking into consideration the number of circulation our percentage would be the highest. Many postoffice inspectors and auditors have said that they have never seen such a record for continued subscriptions.

That reminds me of one of the old subscription agents who was employed by AMERICAN LUMBERMAN who was a unique character. His name was McGraw. He wore a Prince Albert coat and a plug hat. He carried all of his memoranda, subscription blanks and literature in his hat. He would walk into a nonsubscriber's office, send his card in, which didn't indicate his business, and the proprietor of the business would ask him to come in, which he did. Immediately he turned his hat upside down on the table, began taking out his papers, all the time giving the prospect a running synopsis of the fine things that appeared in the AMERICAN LUMBERMAN. He usually came away with an order. At least his record was about 90 per cent sales on all the calls he made. The most unique and interesting character in the subscription business that it was my pleasure ever to meet. Some of you may remember him.

Speaking of interesting characters, I recall a trip I made into Wisconsin in the early 1900s. I was going to northern Wisconsin, riding in a day coach. At some little town on the way a short, stocky man got on the train, came in and sat in the seat with me. He soon began asking questions — where I was going, what my business was, how I got the information for the lumber newspaper. He was Frederick Weyerhaeuser, a most interesting man. He had come to this country some 25 or 30 years before, settling in Rock Island where his brother-in-law F. C. A. Denkman had a sawmill and a sash and door factory. Mr. Weyerhaeuser's part of the business was to get the logs, and he began going out into the timber and arranging for the cutting of the trees, floating them down the river to Rock Island.

Soon he branched out further, organizing and operating sawmills, and took in his neighbors and friends as partners. He was very successful. A good judge of timber and a fine judge of men. He made it his business to know all the details of the operation and then he followed it through. He had a pleasant smile showing through his whiskers—it was a delight to visit with him, he knew so much about the country and what was going on. I met him many times after that. One of the last times I visited with him he was sitting in the outer office of the company at St. Paul. He greeted me as usual "How are you, my boy," and he asked me what I was doing up there. I told him that I had come up to see about some advertising and he said, "You should have it. They ought to keep advertising, it's a good thing to do." I asked him what he was doing there waiting in the outer office and he said he was waiting for the chauffeur. He said

it wasn't right—he could just as well go home on the streetcar for five cents, but the boys thought he ought to ride in the auto and as he bid me goodby he said, "Tell the boys I said to give you an ad," and they did.

Mr. Weyerhaeuser had the reputation of being a square man. One of his managers told me this story. This manager of one of his mills was having a little difficulty with the boss' son who was running a mill. Both mills were on the same railroad. They got logs from the same camp and each said the other was getting the best logs or the best service. They finally agreed to quit fussing and to leave the decision to Mr. Weyerhaeuser. One day he came to town and after a busy day inspecting the operations he told the boys that he would listen to their differences after supper. He called them into the office and he said, "Now son, tell me how it is." And so the son, at some length, told his troubles to his father. His father said, "Son, you did wrong." And then he turned to the manager of the other mill and he said, "Now, you tell me your side of it." The manager felt pretty good because Mr. Weyerhaeuser told his son that he did wrong, so the manager told a long story on his side of the complaint and he expected a favorable answer but Mr. Weyerhaeuser said, "Is that all?" The manager said it was. "Well, you didn't do right," replied Mr. Weyerhaeuser. One of them was wrong and the other was not right. They all laughed, shook hands and there was never any trouble after that. There could be many interesting stories told about Mr. Weyerhaeuser and all were of the same fine character—he was a man of peace.

The lumber business had many noted orators. The Southern lumbermen had a number. No meeting in the south or any other section, if it was a national meeting, was complete unless Mr. John H. Kirby was present, and the chairman called on him for a speech. He was a very patriotic man—and his favorite subject was the "Bill of Rights." He knew all the facts about the Constitution—how it was made — and what was the reason for the adoption of the different sections. He was familiar with the lives and habits of the makers of the Constitution. In fact so thoroughly was he imbued with the subject of the rights of the citizens that all who knew him and heard him felt that they were in the presence of an authority—a real personification of the fundamental truth of the basic law of our land. It was a delight to listen to him—always a red rose in his buttonhole was a fitting adornment.

Capt. J. B. White of Kansas City was an orator and a witty one. He was often called upon to wind up a meeting so that the delegates to the Convention could go home with a good impression of the meeting.

President Teddy Roosevelt was greatly interested in the preservation of the forest. President Roosevelt had appointed Gifford Pinchot Chief Forester. Mr. Pinchot was devoid of tact—he tried the lumbermen's patience by his arbitrary

Capt. J. B. White

rulings — his dictatorial attitude. He was born rich and he felt that he was, by right of birth and standing entitled to his own way, and that his way was the only way. One could appreciate the feelings of the lumbermen who were all individualists and had made their own way—built up their own fortunes in the lumber business by main strength and awkwardness, and they did not take kindly to this rich upstart who had merely good ideas but was short on the best way to present the subject to them — "outstanding lumber barons" as Mr. Pinchot called them. President Roosevelt appreciated that something ought to be done to acquaint the lumbermen with what he wanted to do on the forestry program. He picked out Capt. J. B. White to present this subject of forest preservation to the lumbermen and to the public. Capt. White did a splendid job, he had a convincing manner. The AMERICAN LUMBERMAN printed Capt. White's speech on the preservation of the trees and the leaving of seed trees. The publication of this address together with similar presentations for the need of leaving seed trees helped to bring about the present program that is being adopted by progressive lumbermen for the continuous yield — a policy that will pay big dividends.

In the early days of 1900 the Retail Association took it upon themselves to print a list, showing those manufacturers who sold to mail order houses. Many of the older members will recall the agitation in the days of long ago where mail order houses attempted to sell ready cut houses by mail. The retailers resented this and printed a list of those manufacturers, and the Government in 1910 instituted suits against these associations. The AMERICAN LUMBERMAN sent one of its men, Mr. Carson, to the different cities where the trial was being held and it was there that he became a right hand assistant to General Boyle and Judge Purdy, the attorneys defending the lumbermen. His reports to AMERICAN LUMBERMAN were used by the industry and became a part of the records of that very interesting chapter in the lumber trade. General Boyle, who was one of the chief counsels, was a very interesting character. He was very much against the centralization of power in Washington. He used to make speeches at the retail conventions, calling attention to the fact that it was because of the centralization of power in Rome that Roman civilization disappeared. He predicted the same things for America if power was increased in the central government. It sounded like some of the things that we hear today.

The hearings on the Government suits were held in a good many cities throughout the United States. It was the habit of the defense attorneys and witnesses to get together in the evening at some hotel after they had had their supper, and discuss the procedure for tomorrow. At one of these gatherings Judge Purdy, who formerly had been an Assistant Attorney General of the United States, told this interesting story. One day he, Judge Purdy, was at the White House and President Theodore Roosevelt handed him a letter. It was from a Rough Rider who was in jail in some point in New Mexico. The soldier wrote to the President and said something like this: "Dear Colonel: I am in jail—they say I

killed a man. Please send me a check for $100." President Roosevelt turned to Mr. Purdy and said, "Send him this check for $100." Judge Purdy sent him the check. Later in the year another letter came from the soldier which President Roosevelt showed to Judge Purdy and the letter said, "Dear Colonel: We elected a new Prosecuting Attorney and I do not need the $100. I am returning it to you herewith."

In 1911 the AMERICAN LUMBERMAN began a campaign of Community Building under the title of "There is no place like Home." It stressed the idea that the retail lumberman should be the central figure around which the community could build and rebuild its trade territory, by making the community a better place in which to live; beautify the town, build a community house for social gatherings, encourage boy's and girl's club work, carry the campaigns into the schools and make it possible for folks to know and appreciate the rest of the folks. AMERICAN LUMBERMAN devoted two pages per week to this campaign. It reported local stories from weekly papers. The manager of AMERICAN LUMBERMAN went on a national tour, carrying illustrations which were the first to show what could be done with old run-down properties. The result of this campaign was that retail lumbermen everywhere became more prominent in the work of their communities. It stimulated their business—it made them a leading citizen of their town.

At the beginning of World War No. 1 the National Lumber Manufacturers' Association through the wise leadership of its secretary and general manager, Wilson Compton, called a meeting of all of the lumber associations in the U. S. and held a three day Convention at Atlantic City. J. J. Donovan of Bellingham, Wash., was the presiding officer. He was one of the noted orators of the West Coast. He could make the eagle scream — he could make you feel proud of your country and inspire you to deeds of heroism—a most kindly and courtly gentleman. Under his wise leadership and generalship there was built up throughout the industry a confidence that helped to bring about the successful building of cantonments and the delivery of lumber for purposes of the war and for civilian needs that was a real lesson as to what the lumbermen could and would do.

This laid the foundation for another service that the AMERICAN LUMBERMAN rendered in presenting the needs of the retail lumber trade to Chairman Baruch of the War Industry Board of World War No. I. This publication telegraphed to prominent retailers throughout the U. S. and gathered a large committee of retailers in Washington, D. C. and they told how, in order to conserve crops to keep the food supply continuing and save it from spoiling, that the farmer should be permitted to buy lumber to the amount of $1500. Because they usually build their barns and granaries themselves, it was pointed out that it would not take any extra labor, and as the result of that bringing together those retailers the War Board did issue an order permitting farmers to buy this amount of lumber. It was a very wonderful and helpful service to the lumber trade.

In 1924, AMERICAN LUMBERMAN, seeing the need for remodeling and repairing old homes, spent several thousand dollars taking pictures of old homes and remodeled homes, making those pictures so that you could lay down the old home and lay over it a mask of the new modifications and bring the improvements to an immediate visual position whereby the prospective customer could see what could be done by spending a little money in the proper way. That movement spread. Thousands of copies of these booklets were issued by the AMERICAN LUMBERMAN and it resulted in a very large trade for the industry, not only for the manufacturers but for the retailers.

It awakened the retailers to the need of a new viewpoint being taken of the business. A new insight into the possibilities of service for their communities. Ever since that day many a retail lumberman has found that his sale of lumber for remodeling and repairs was larger and greater than the sale of new lumber for new buildings.

The AMERICAN LUMBERMAN was first to suggest the organization of a Government Agency to make loans on homes. It suggested the Home Owners Loan Corporation. It circularized the members of Congress and through AMERICAN LUMBERMAN'S efforts there was introduced into Congress a bill authorizing the establishment of the Home Owners Loan Corporation. That bill was passed and the association was inaugurated and established under the Hoover Administration. It has proved to be a great stimulus in the home building field.

The AMERICAN LUMBERMAN has always been in favor of proper grading of lumber — proper preparedness for use. It was early in the administration of Secretary of Commerce Herbert Hoover that the AMERICAN LUMBERMAN received a request to send its manager to Washington to confer with Secretary Hoover regarding the establishment of grades on lumber. Many will recall that there was a big campaign at that time to establish grades on all kinds of materials and to lessen the number of patterns and lessen the number of articles that were so nearly alike. In other words to standardize lumber as well as other things.

Many people remember the large number of different kinds of axes that were used in the lumber industry. More than half of them were relegated to the rear in the new standards. Secretary Hoover indicated in his letter that he would be pleased to see me at a certain hour in his office in Washington and would I kindly report at that time. An answer was sent saying that I would be there. I arrived in Washington the night before and early in the morning went to the office of Secretary Hoover. In the ante room there was a large number of lumber manufacturers waiting for appointments. A lively discussion was soon in progress but none of the manufacturers talked about the different grades. After a few moments the Secretary's assistant came to the door and called my name.

Mr. Hoover got at once to the subject. Evidently he had made careful inquiry about these manufacturers — their habits — their manner of talking and expressions. He knew more about them than I did. I recall that he said, "Do you know this manufacturer?" Yes. "Will he do what he says he will do after he has blustered and told me that he won't do it? Can I rely upon him after the blustering has blown over?" I told him that he could. He asked me about a number of other men, always putting into the question the particular attributes that that lumberman had. It was a very enjoyable interview. It lasted a little longer than we had scheduled it for, and he had a habit of holding up one finger for five minutes, two fingers for ten minutes, three fingers for fifteen minutes to the doorkeeper so that the doorkeeper would know that I was

(*Continued on page* 154)

The Story of

The stock woodwork industry was a lad in knee pants when the AMERICAN LUMBERMAN was born.

Both grew up together and have played important roles in the history and development of the lumber and lumber products industries.

Although little heralded in song and story, the woodwork industry enjoys a romantic and colorful background. Perhaps it is not as rugged or exciting as the development of the lumber industry with its fanciful tales of Paul Bunyan. Nevertheless, its history is deeply rooted in the beauty and culture of early American architecture—from the Colonial masterpieces of Williamsburg to the simple dignity of the New England farm home or fisherman's cottage.

Woodwork, in rather crude but practical form, was used in America by the Pilgrims who landed at Plymouth Rock. One of the first acts of our early settlers was to build shelters for their families. Each man undertook this task for himself, sometimes with the help of his neighbors. As each shelter took shape, the builder found it necessary to hew in his own crude way the door to close the opening through which he and his family were to enter and leave. Shutters were similarly provided for the window openings which could be opened to let in the warm summer air or closed to shut out the rain or the icy blasts of the winter months.

As communities developed, some men were found to be more proficient than others in the art of constructing shelters or homes. They soon found it worthwhile to devote their entire time to this trade, leaving others to engage in the tasks in which they excelled. Eventually they became known as carpenters.

But even in the field of carpentry, some men surpassed their brothers in the art of fabricating the more complicated wood items that went into the home such as windows, doors and cabinets. In many cases these skills had been acquired in the old world. As our population multiplied and our communities grew, these individuals found it possible to devote their time exclusively to the tasks for which they were best fitted. Thus there came into prominence the cabinet maker. His shop took care of the needs of the local community. We still find his counterpart today in the custom or special mills that are located in almost every city and town in the United States.

In the meantime, the new production techniques of American industry were gradually taking shape. By

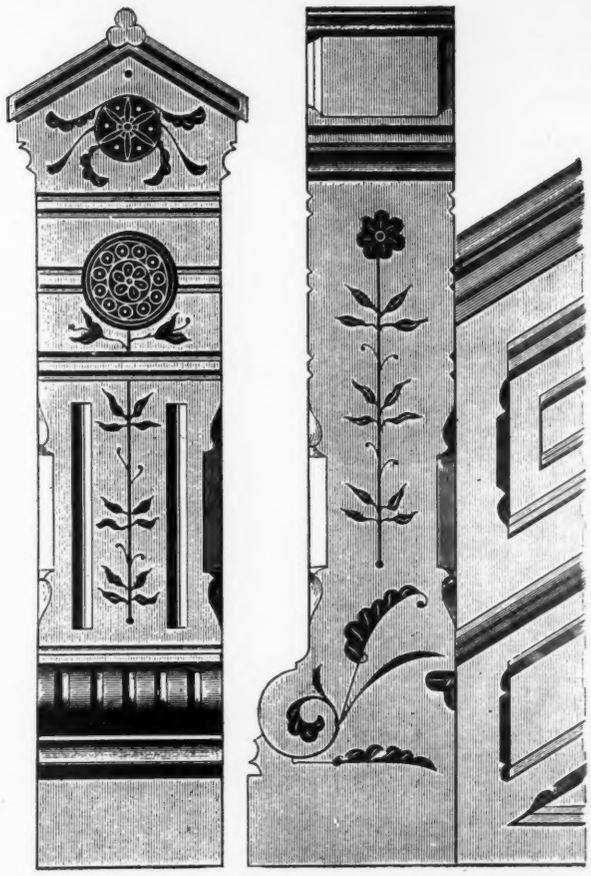
MILLWORK

1850 lumber manufacturing was no longer a local or provincial business. Mass production techniques had come into use and were being improved upon rapidly. The importance of mass distribution, without which there could be no mass production, was clearly recognized. Wholesalers and dealers in lumber and building materials were to be found in all progressive communities.

It was probably in the decade between 1840 and 1850 that the first attempt was made to apply the principles of mass production and mass distribution to woodwork products. Thereafter, the development of the stock woodwork industry was quite rapid.

As the AMERICAN LUMBERMAN, in the early days of its existence, sought to acquaint itself with the rapidly developing wood industries, it found a number of well known stock woodwork companies already in operation including Curtis Brothers & Company, Clinton, Iowa; Carr, Ryder and Wheeler, Dubuque, Iowa; Farley & Loetscher Manufacturing Company, Dubuque, Iowa; Rock Island Lumber and Manufacturing Company, Rock Island, Illinois; Huttig Brothers, Muscatine, Iowa; Muscatine Sash & Door Company, Muscatine, Iowa; Morgan Brothers, Oshkosh, Wisconsin; C. Foster & Co., Oshkosh, Wisconsin; R. McMillen & Company, Oshkosh, Wisconsin; Paine Lumber Company, Oshkosh, Wisconsin; Radford Brothers, Oshkosh, Wisconsin; C. J. L. Meyer & Sons Company, Chicago, Illinois; Palmer Fuller & Company, Chicago, Illinois; Goss and Phillips Manufacturing Company, Chicago, Illinois; Lewis and Steenburg, Fond du Lac, Wisconsin; J. P. Gould, Oshkosh, Wisconsin; Schroth & Ahrens, Winona, Minnesota; Hall & Munson, Bay City, Michigan; Mershon & Company, Saginaw, Michigan; M. A. Disbrow & Company, Lyons, Iowa; Bardwell, Robinson & Co., Minneapolis, Minnesota; Wheaton, Reynolds & Company, Minneapolis, Minnesota; Smith & Wyman, Minneapolis, Minnesota; Fraser & Shepherd, Minneapolis, Minnesota; Johnson & Hurd, Minneapolis, Minnesota; Church & Graves, Minneapolis, Minnesota; Jensen Gilbranson & Company, Minneapolis, Minnesota; Williamson, Libbey & Company, Oshkosh, Wisconsin; Conley Lumber Company, Oshkosh, Wisconsin; S. A. Brown & Company, Chicago, Illinois; Fond du Lac Sash & Door Company, Fond du Lac, Wisconsin; Conway Manufacturing Company, Milwaukee, Wisconsin; Sanger, Rockwell & Co., Milwaukee, Wisconsin; Briggs, Wharton & Beveridge, Appleton, Wisconsin; Nairn, Gilles & Company, Burlington, Iowa; E. W. Persons, De Pere, Wisconsin.

Although originally centralized in the New England states, it was only natural for the stock woodwork industry to eventually take root and flourish in the Middle West. In 1873 woodwork was made largely from Northern White Pine produced in northern Michigan, Minnesota and Wisconsin. By locating in the Middle West, the stock millwork maufacturers were not only near the source of their raw materials but were in a position to serve the markets in the East as well as those rapidly developing in the West.



Massive, old style newel post of the eighteen seventies

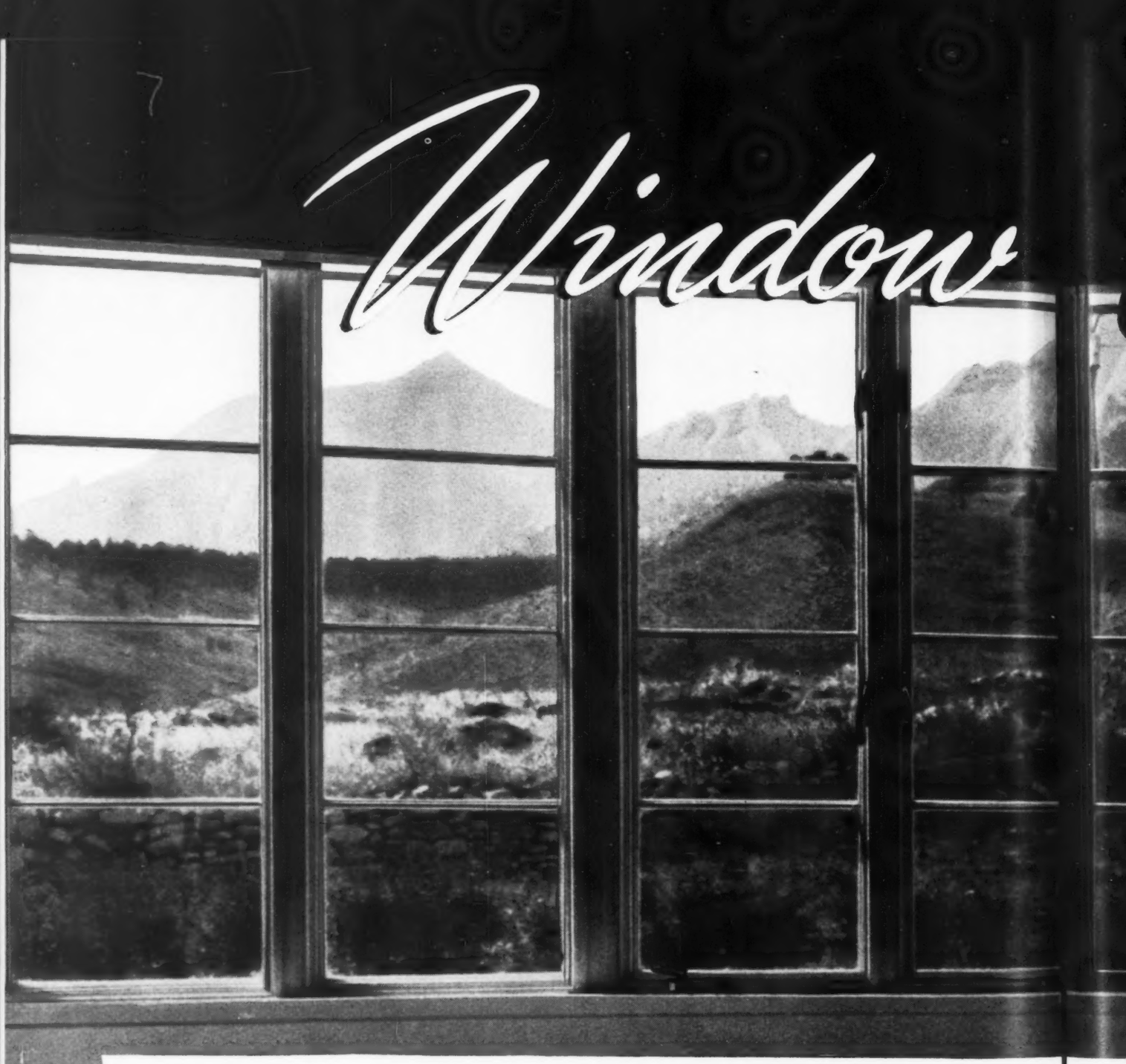
Then at the turn of the century came the opening of our Western timberlands. With the supply of Northern White Pine being gradually depleted, and with the demand for stock millwork products constantly increasing, the industry was already casting its eye around for new sources of raw material. The answer was found in the Western Pines, particularly Ponderosa. Here was a wood that proved itself highly adaptable for woodwork purposes. It machined and worked easily. It took nails and screws without splitting. It sanded satin smooth. It took finish and held it well. Furthermore, the supply was plentiful.

With the discovery of the adaptability of the Western Pines for stock woodwork purposes, there also came the establishment of a number of stock plants in the West, particularly in Washington, Oregon, California and Texas.

Today there are about 75 plants, the predominant part of whose production is in stock woodwork products. This not only includes the manufacturers of Pine products but of Fir doors as well.

Stock woodwork products are usually defined as those items of building woodwork which are manufactured in standardized sizes and designs and which are carried in stock for resale by sash and door jobbers and retail lumber dealers. Included are windows, frames, softwood doors, hardwood doors, veneered doors, screens, cabinets, mouldings, stairwork, mantels and interior trim.

Over a period of years, stock woodwork products



. . . . with ANDERSEN

COMPLETE WOOD WINDOW UNITS

"Window Pictures" . . . living pictures framed forever with Andersen Complete Wood Window Units. Yes, the beauty of the outdoors will be brought to the comfort of the indoors in the 194X home. Window units will be wider in 194X and wider use will be made of them. And, with this increased use of Andersen Complete Wood Window Units will come increased recognition of their importance. For here are complete wood window units that are designed as a functional part of the entire structure, and adaptable to all types of residential design. And, though designs may change and innovations develop—of this you may be sure: the quality and precision-built excellence of Andersen Complete Wood Window Units will remain *unchanged* in order to meet the exacting requirements of the building profession.

Further they will be promoted and sold, as always, through the regularly established retail channels of the millwork industry—the lumber dealer.

FOR TOMORROW'S HOME BUY BONDS TODAY

Andersen Corporation

BAYPORT • MINNESOTA

Pictures
For the 194X HOME
ONLY THE RICH CAN AFFORD POOR WINDOWS

PRICE CURRENT.

June 15, 1876.

PALMER, FULLER & CO.

WHOLESALE MANUFACTURERS OF

Doors, Sash,

BLINDS,

Stairs, Stair Railing, Balusters and Posts,

MOULDINGS, ETC.

DEALERS IN

LUMBER, LATH AND SHINGLES.

Cor. West 22nd and Union Streets,

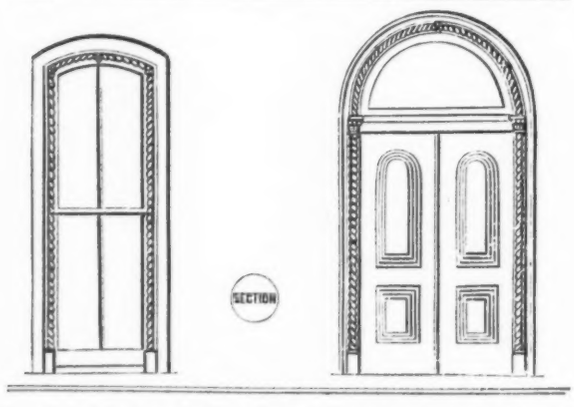
CHICAGO, ILL.

P. S.—In order to reach our Manufactory and Office from the principal hotels in the city, take either the Lumberman's or Canal St. line of Stages, or the Archer Avenue Horse Cars.

Title page of millwork catalog issued in 1876. Note directions for reaching plant from principal hotels of the city

ROPED, RIBBON, SPIRAL AND BEADED MOULDINGS.

Particular attention is called to the variety and styles of these Mouldings, ranging in size from ⅜ inch to 5 inches in diameter. Circles of all sizes worked to order.



Samples of choice stock window frames, doorways and doors in vogue seventy years ago

have proved their superiority in a variety of ways. Being manufactured on a quantity production basis, the cost is low. Produced in standardized patterns and sizes, they can be carried in stock and are readily available from 22,000 retail lumber dealers located in rural as well as in metropolitan areas. Since these products are manufactured under high standards of quality and design, the buyer knows exactly what he is getting. Styles are also available for all types of construction and architectural design. In addition, wood is the most suitable of all raw materials for windows, frames, doors and other building millwork products.

Keeping his line of millwork in harmony with current architectural trends is a task to which every stock producer devotes constant and careful attention. Leading architects have been employed to assist in the development of designs that are architecturally correct. The selection is so complete and so varied that practically every conceivable need is covered in the well manufactured lines of the large mills. Architects, while exercising freedom of architectural expression, find that stock products are available to take care of their most exacting requirements.

Standard stock Ponderosa Pine products have been and will continue to be available to meet the needs of all types of architectural designing. The beauty we find in the American home today is centered in these products. That is one of the reasons why they are so important to the retail lumber dealer. It is the line of merchandise around which he can develop his selling program and it is a line that is profitable as well.

In the seventy years that have transpired since the founding of the AMERICAN LUMBERMAN, tremendous improvements have been made in the physical plant, machinery and equipment of stock woodwork producers.

Gone are the days of babbitt bearings and belt driven machinery. The development of high speed steel for cutting tools has increased cutting speeds to a point undreamed of in the nineteenth century. Electric routers, for example, operate as high as 20,000 revolutions per minute. They do such smooth work that no further finishing is necessary. Other engineering refinements enable manufacturers to work wood to very close tolerances. No longer is it correct to assume that an article to be made accurately must be made from metal rather than wood.

In the matter of machinery and equipment, the stock woodwork industry need apologize to no one. No other mass production industry in the United States can display anything more modern or up to date. Credit for the advancements made in this field must go to the manufacturers of woodworking machinery and the stock woodwork engineers with whom they work hand in hand.

During the past fifteen years there have been a number of outstanding developments in the stock woodwork industry. Among the more important can be listed the development of new products with particular emphasis on unit prefabrication; advancement in the art of wood preservation; the adoption of an industrywide trade promotion program designed to acquaint the consuming public with the merits and superiority of stock woodwork; the engineering of wood sash for factory and industrial construction as well as the conversion of woodwork facilities to war work since the advent of Pearl Harbor.

Unit Prefabrication

The stock woodwork industry was among the first in the lumber products field to recognize the potentiali-

ties and the importance of the prefabrication of parts. Probably the most striking example it has to its credit is the prefabricated window unit.

Not so many years ago, all frames were made on the job by the carpenter who would then trim down a couple of sash in an effort to make them fit the frame. In the installation of the sash, chains and weights were attached. If the home owner insisted, weatherstrip was applied. The following autumn the carpenter returned to the site to fit the windows with storm sash and the following spring he came back again to install insect screens.

As a result of this procedure, it was difficult for the home owner to gauge in advance the quality of his finished product. Of course, a majority of these installations performed satisfactorily, but there were exceptions. Windows, on occasions, were improperly fitted. As a consequence they rattled or at other times stuck and could not be opened or closed. Very little attention, if any, was paid to the efficiency of the weatherstrip used. Improper fitting also exposed the wood to extreme moisture and atmospheric conditions. This led to further complications and difficulties. The consumer, not knowing the actual cause of his trouble more frequently than not blamed wood.

To overcome these difficulties, and to give the consumer a scientifically constructed window at low cost, the stock millwork industry brought into existence the prefit window unit. Research was employed in its development. Air infiltration tests were made to gauge the effectiveness of different types of weatherstripping. Precision methods of manufacture were employed which meant that the finished window while tightly fit could still be opened and closed with ease.

No prospective home owner need worry today about future window troubles. He knows that through his retail lumber dealer he can purchase a product that spells perfection in window construction, whether it be double hung, casement, sliding, circular, basement or other type. He also knows that behind the product there stands the reputation of a responsible stock woodwork producer.

The principles of prefabrication and precision manufacture that are being applied in the production of prefit window units are also being applied by the industry in the production of kitchen cabinets, china closets, prefit doors, mantels, stairways and a variety of other items classified under the head of stock woodwork products.

Modern type of prefit double hung window. Narrow muntins add to beauty and increase area of glass

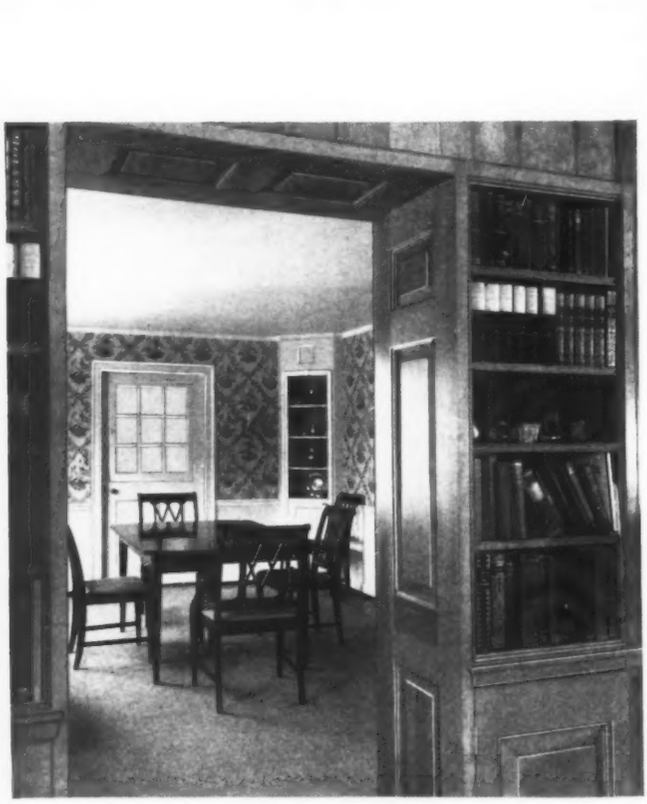
Prefit weathertight casements with horizontal muntins are carried around the corner to increase light

Wood Preservation

In recent years competition between wood and other materials in the building products field has been growing more intense. "Sales arguments" for competing materials have been pressed upon the architect, contractor, home owner and prospective home builder through almost every known advertising and publicity medium. Among those most commonly and frequently used against wood has been that it "rots." The fact that of the millions of wood sash and frames in use only an infinitesimal number have failed from decay has been conspicuously avoided, but, since the average layman does not know the facts, this claim produced the desired impression in many quarters.

In the early '30s, some of the larger manufacturers of wood sash and frames, recognizing that mere denial of such claims would not correct the public's impression, proceeded to seek ways and means of resisting

Demonstrating utility of hinged folding door for use on hallway closets where space is limited. Folding door and entrance door are stock items



Modern streamline trim and doorways together with stock paneling and corner cabinets lend charm to the dining room

Association seal of approval for toxic treated products

decay and stain caused by fungus growth in ALL sash and frames. Several preservative solutions and several treated products appeared on the market and the claims made for some of them brought the subject of "decay" more prominently to the attention of the specifiers and users of building materials. Confusion was soon added by the claims and counter-claims advanced for competing preservatives and preservative-treated products. Thus, what was started as a constructive move to improve the product and protect it against unjust criticism seemed headed for failure.

At this point National Door Manufacturers Association tackled the problem, under the guidance of an Advisory Committee composed of research authorities on wood technology. In 1938, after several years of investigation and study, minimum standards of toxic treatment were established. A definite procedure for test and inspection was set up. License to use a distinctive Seal of Approval was then given to manufacturers and distributors who agreed to treat their products in conformity with the standards set up by the program. The Seal has been publicized to educate both the building trade and the general public.

At the time it was also recognized that additional protection would be desirable to guard against expansion and contraction caused by excessive humidity and condensation. This called for treatment to resist the effects of moisture, which, under some conditions, might cause warping, twisting and dimensional variations in wood products, particularly before installing and painting. More than three years of further study and research culminated in the establishment in August, 1942, of a new set of minimum standards, namely, the Toxic Water Repellent minimum Standards. The Toxic Seal of Approval was then supplemented with a Toxic Water Repellent Seal.

Some manufacturers and distributors use one or the other seal, while others use both seals, depending upon specifications, location, use, market requirements and other conditions.

The Toxic Water Repellent Standards, as the name implies, include the same protection against fungus growth, decay and stain, as is present in the Toxic Minimum Standards. The only difference is in the addition of water repellent treatment.

The purposes and objectives of the program may be summarized briefly as follows:

1. To provide for the identification of windows, frames and other architectural wood products which have been toxic water repellent or toxic preservative treated in accordance with minimum standards of excellence as a protection to the consumers and distributors of such products.

2. To provide manufacturers whose products are toxic water repellent or toxic preservative treated in accordance with NDMA minimum standards, with an identifying mark by which those products may be distinguished from those which may not be so treated.

3. To foster the maintenance of high standards in the toxic water repellent or toxic preservative treatment of wood products as a means of depriving competitive materials of all basis for unjustified claims against them.

The importance of the NDMA toxic and toxic water repellent standards to the wood industries is well exemplified by certain developments since Pearl

Harbor. The Army, Navy, Maritime Commission and other agencies of the government are today buying many war products made from wood. These agencies, in their choice of wood for certain uses, recognized the need for toxic and toxic water repellent preservation. As a consequence, these standards have been incorporated in a number of government war time specifications. It is a contribution to the war effort of which the stock woodwork industry can justly be proud.

Trade Promotion

The establishment of the Ponderosa Pine Woodwork Association, which has as its objective to further as well as to protect the present markets for stock woodwork through the medium of advertising, publicity and sales promotion, is another illustration of the development and progress of the stock woodwork industry.

This association, with offices at 111 W. Washington Street, Chicago, includes a membership of not only stock woodwork but Ponderosa Pine lumber manufacturers.

The name Ponderosa Pine Woodwork needs no introduction to the trade, especially to jobbers and lumber dealers. For the past two years this association has been conducting a consumer and trade advertising campaign to acquaint prospective home owners as well as architects, contractors and builders with the merits of Ponderosa Pine woodwork. The important fact is also emphasized that these items are carried in stock by retail lumber dealers ready for immediate use.

"Open House," and more recently the new edition entitled, "The New Open House," is being widely distributed to the public. This 32-page booklet, full of beautiful illustrations depicting ideas and practical suggestions for the uses of millwork in every room of the home, whether conventional or modern, has received the enthusiastic endorsement of the entire building industry. Jobbers, dealers, builders and manufacturers alike have praised this booklet for its sales stimulating qualities and value to the consumer in home planning.

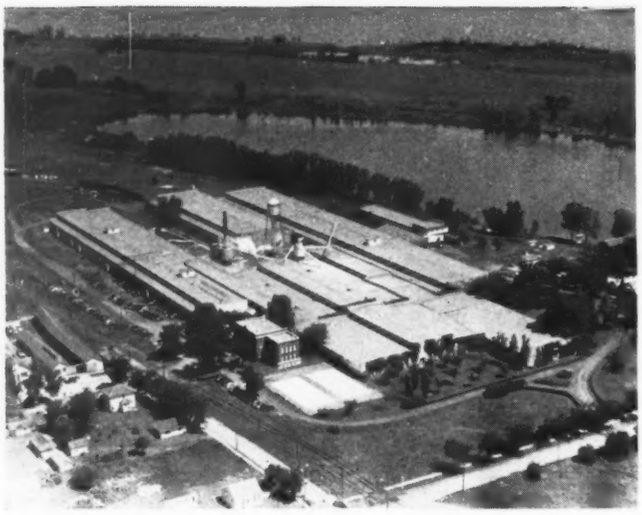
Publicity articles are constantly appearing in newspapers, and consumer and trade publications on millwork, showing illustrations, many of which are taken from the "New Open House." Articles are also prepared on such timely topics as how fuel can be saved through the use of storm windows and doors, how doors and other woodwork can be used to create new storage space and closets, and in the proper care of woodwork.

Jobbers and retail lumber dealers have found the Ponderosa Pine Woodwork program a working tool of great value to them. As long as the retail lumber dealer and the woodwork jobber are the avenues of distribution through which woodwork products flow from factory to the consumer, this advertising and publicity is having its effect in their communities, translating consumer interest into buyers, thus increasing sales and profits.

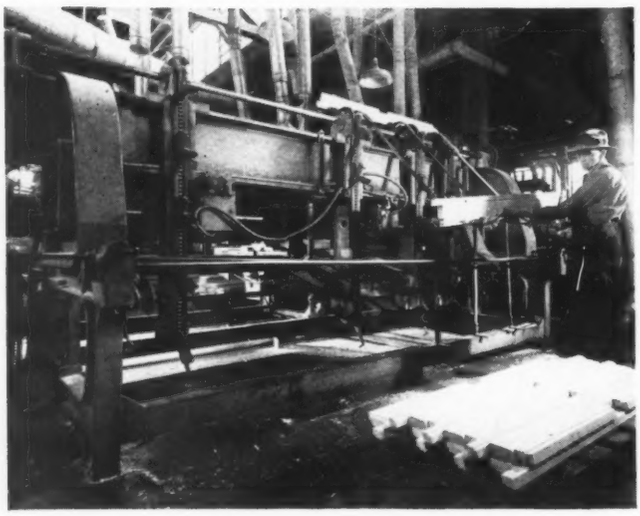
During this present war economy, Ponderosa Pine Woodwork is continuing its constructive advertising and publicity program, pointing out what it is still possible to do today—advancing ideas which will be of direct benefit to the war effort. The promotion of storm sash and doors is an example. At the same time the Association is not overlooking the future and is at work now preparing for the postwar woodwork market.

Narrow trim and excellent architectural styling for doors and window together with the graceful sweep of the stairway lend character to this hall

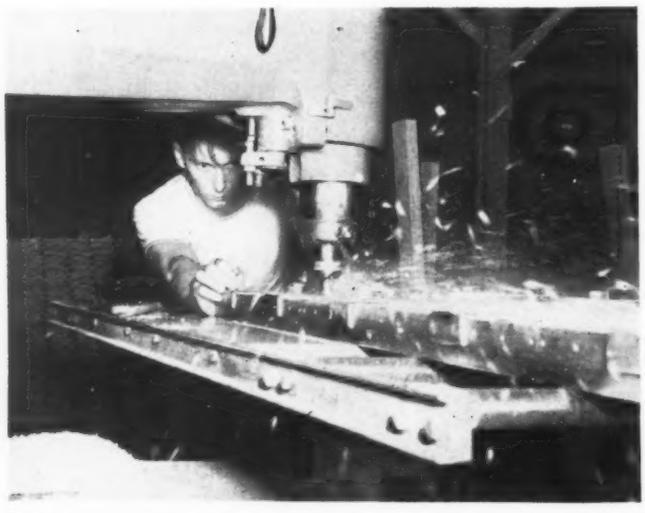
Type of modern promotional literature being used by stock millwork industry as illustrated by this attractive booklet



Mammoth millwork plant equipped to turn out stock items to meet all millwork demands



Machinery embodying the last word in technical advances used to cut and rout window sills



High speed routing with a precision machine operated by an expert

Industrial Wood Sash

During the early days of the war, the stock woodwork industry decided to engineer an industrial wood sash unit that would not only prove as satisfactory as, but superior to, similar products made from competitive materials. To assist in this work, the internationally known architectural firm of Graham, Anderson, Probst and White was employed. Working under the supervision of a special technical committee representing the National Door Manufacturers Association, the industry developed what is now widely known as the National Projected Wood Sash Unit. They may be manufactured, without royalty, by any company wishing to produce them.

These units may be installed individually or the various units may be combined in height and width to meet almost every installation requirement in industrial and commercial buildings, schools and hospitals, and in any type of wall construction.

The frame is designed to accommodate either bottom pivoted, in-projecting vents or top pivoted out-projecting vents without modification or change in the hardware requirements. The operating hardware is friction controlled and holds the ventilator in any desired open position without danger of banging or slamming with resultant glass breakage.

Frames are completely factory fitted and all sash prefitted to exact size so as to minimize the installation labor in the field. All parts are treated with toxic preservative to give them greater durability under severe service conditions. Screens or storm sash may be easily and economically applied.

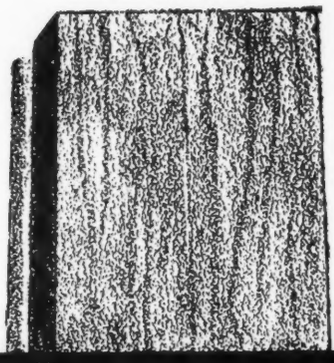
A comprehensive manual containing complete information about these National Projected Wood Sash with specifications and detailed drawings for both in-projecting and out-projecting types was prepared by the National Door Manufacturers Association and given wide distribution among architects, contractors, jobbers and retail dealers. Thousands of these sash have been manufactured and in actual service are proving to be a superior product in every respect. These units offer tremendous postwar potentialities and have already gone a long way in recapturing an important market for wood.

Conversion to War Work

With the advent of the war, the stock woodwork industry answered the call to military duty. Since Pearl Harbor its facilities have been devoted in large measure to war work and essential civilian needs.

The first job which the stock manufacturers were called upon to tackle was our huge cantonment construction program. Not only was the assignment handled successfully, but in doing so the industry established for itself a record of which it has reason to be proud. The War Production Board had occasion to express itself on this subject early this year through the Chief of its millwork section. This official, in congratulating the industry on its record, said he did not know of a single instance where the stock millwork industry failed to meet its delivery dates on war work.

After the war construction program passed its peak, stock factories began to convert their facilities to other types of war work. Today hundreds of products completely foreign to its normal lines of production are being turned out by the millwork industry. Included you will find ammunition chests, shell cases, shell supports, clothing locker boxes, prefabricated huts, cable reels, hospital screens, wood culverts, ship



HOLT

Serving the Lumber Trade for 96 Years

In 1847—14 years before the outbreak of the Civil War—the first Holt mill went into operation at Oconto, Wis.

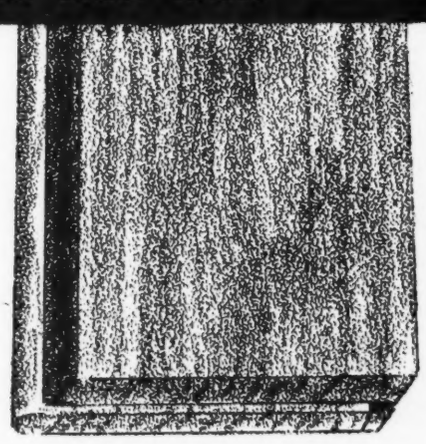
Today great grandchildren of early Holt customers are still relying on Holt.

Our congratulations to American Lumberman on its 70th Anniversary.

Holt Hardwood Co.
Oconto, Wis.

Members M. F. M. A. and N. H. L. A.

Hard Maple, Birch, Beech and Red Oak Flooring



YOU WON'T HAVE TO RECONDITION SASH GLAZED WITH ARM-GLAZE

The reconditioning of windows and storm sash has always been a headache and a bill of expense. In most cases the trouble has been traced to the improper selection of the glazing material. *Arm-Glaze was developed to lick the reconditioning problem and it has.* Dealers handling sash glazed with ARM-GLAZE (or "blue putty" as they call it) praise it highly. In over two years there has never been a complaint with ARM-GLAZE.

Made by a secret Armstrong formula, ARM-GLAZE puts the stamp of quality on the sash you sell. It not only saves you money but helps you build prestige and good will among customers. Arm-Glaze has a practical set but remains elastic and thus assures long life. Unlike ordinary putties that become rock hard and shear the bond, ARM-GLAZE absorbs the expansion and contraction of the wood thus eliminating a yearly check-up. For your protection, demand ARM-GLAZE (the blue putty) on the next sash you buy.

Made only by

THE ARMSTRONG COMPANY

DETROIT • DALLAS • CHICAGO

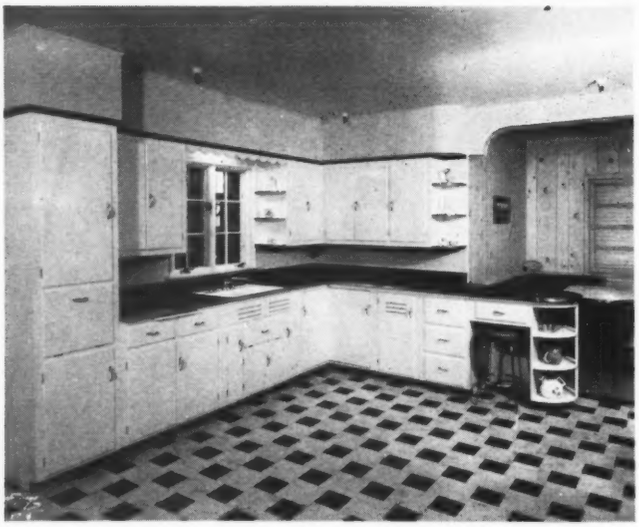
Manufacturers of
Putties, Glazing and Caulking Compounds, Furnace Cements

DEMAND SASH GLAZED WITH ARM-GLAZE

BUY WAR BONDS

THEY'VE NICKNAMED IT "BLUE PUTTY"

YOUR ASSURANCE OF A BETTER WINDOW



The last word in convenience, styling and utility are clearly evident in these stock kitchen cabinets and sink and work top

Corner window and serving top are among the principal utility and beauty features of this breakfast nook

Stock mantels styled for every type of architecture and interior furnishing make the fireplace a thing of beauty

joinery, industrial sash, wood cots, tent and flag poles and a variety of other products needed by our military forces. All this represents a program of conversion that was entirely voluntary on the part of the industry.

In addition to this direct war work, essential civilian needs are also being properly cared for. Storm windows, storm doors and combination doors for fuel conservation purposes are being turned out to the extent that lumber is made available by WPB. Windows and doors needed for the repair and expansion of our agricultural facilities are being supplied in the quantities needed. Screen windows and screen doors, so important to public health, are also being produced to the extent permitted by WPB.

The stock woodwork industry has established for itself an enviable record in World War II. It intends to keep that record unblemished.

Post War Planning

A great deal is being said today about the home of the post-war era. Many fantastic ideas are being advanced. Certain people in the construction industry are telling the public that the home as we know it today will be completely obsolete as a result of new techniques and developments brought about by the war. They are endeavoring to dissatisfy the home owner with what he has today by presenting to him many fantasies that will never see the light of reality.

The stock millwork industry has no intention of taking part in any unrealistic day dreaming. At the same time, it has no thought of abandoning the program of product research and development in which it has been engaging for many years past. New developments will occur which will be translated into better woodwork for the consumer. The process, however, will be evolutionary, not revolutionary.

As in the past, the stock woodwork industry has no intention of asking the public to experiment with the unknown. New products will be placed on the market but only after the industry has assured itself that in practical use they will prove superior to anything that has gone before.

The United States Patent Office has probably issued more patents covering woodwork products than it has covering any other individual group of building materials. Still very few of these patents represent improvements that are practical. Those that justify themselves in laboratory tests simulating actual service conditions do find their way to the consumer. Only products that are tried and tested reach the buying public.

Dealers, jobbers, architects, contractors and the building public can expect through this process of evolution continued improvement in the products of stock millwork factories. The industry responsible for unit prefabrication, toxic and water repellent preservation and sound trade promotion and merchandising aid will not let them down in the postwar era.

Remarkable strides in wood engineering and wood technology are being made at the present time. These developments are only proving more conclusively than ever before that wood is the most versatile of all raw materials. The stock woodwork industry is watching these developments closely with a view to giving them practical application whenever it will result in a better product.

Quality Millwork Since 1866

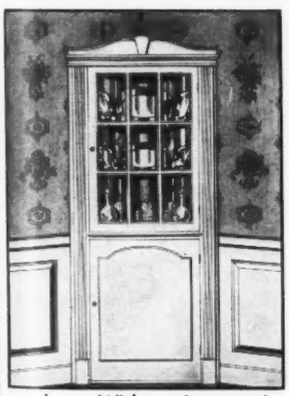
We, too, celebrate an Anniversary—our 77th year of faithful service to the lumber trade.

Born during the trying days of reconstruction, how better to celebrate this year's birthday than to devote our entire energies to a greater war effort—day and night operations to produce quality millwork and containers used in hundreds of places to carry on America's Fight for Freedom!

Cole Manufacturing Company

Memphis, Tenn.

Nathaniel Dyke, Jr., President



NEW ENGLAND'S FOREMOST MANUFACTURER of STOCK MILLWORK

Gregg

Right now—our production facilities have been dedicated to an all-out job of winning the war. We are working almost full time on war housing jobs and on war orders. Without interruption of this vital work, however, we have not forgotten our customers—established retail dealers—and have managed to supply them at least in part with Gregg products, necessary to the modernization, conversion, repair and maintenance of present homes.

GREGG & SON • **NASHUA, NEW HAMPSHIRE** *Established In 1719*

Woodwork of Quality for Today and Tomorrow

1870-1943

One Old Friend Greets Another

Even 3 years before the establishment of the American Lumberman, Dyke Bros. began their long career of service to the construction industry. And what an interesting period it has been! From modest beginnings, the growth of our business and that of our customers has continued through wars, fires, panics and depressions until we now offer a complete line of building materials throughout a dozen Southern and Southwestern States.

Congratulations to the American Lumberman! Like you, we face the future with confidence—73 years young and ready for the greater opportunities tomorrow will bring!

DYKE BROS.

Mfrs. and Jobbers of Building Material

Fort Smith, Ark.

Sales Offices and Warehouses Throughout the South and Southwest

The Only True Story in This Here Book

By Lumber Jack

Far as I can see thur ain't much truth in this book, and that includes calling it the "70th Anniversary Issue." Seems to me it's about time somebody told the real story about the AMERICAN LUMBERMAN and the industry it has been doing business in for a lot more than 70 years, and that's what I aim to do, then give you some of the real lowdown on what things are going to be pretty soon after this here war.

First off, that story about a couple fellows named Judson and Defebaugh starting the AMERICAN LUMBERMAN is just so much eye-wash, and goes to show what even the editors don't know about their own magazine. This AMERICAN LUMBERMAN, now, nobody knows who started it or how long it has been in business. Probably something closer to 700 years than 70 years. My grandfather was reading it 100 years ago, and before that they had run out of volume numbers and had to start over again. Reason was the volume number was so big it took up twelve lines of agate type on the title page and the postal authorities complained. Course, that was because when Paul Bunyan took it over—but that gets a little ahead of the story.

One of the first things you read in any good American history, if it's good enough to give real important details, is that after Massassoit got through smoking the peace pipe with the Plymouth Rockers in 1620, he says to them, "Now folks, looks like first off you got to build yourselves some houses, and we got all kinds of lumber and logs to do it with. I'll leave this here copy of the AMERICAN LUMBERMAN with you, and you can find out from it what there is hereabouts. If you need any more information, just leg it over to the editor at the Wampanoag hut, and he'll fix you up. Well, that there is proof enough that this 70th Anniversary stuff is just plain foolishness.

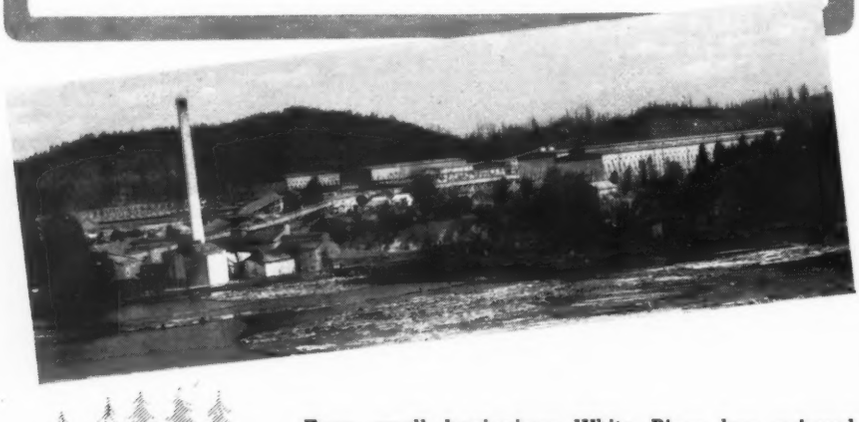
Like everything else, as soon as the Pilgrims got settled they started shoving the Americans around, and taking away from them everything they thought the Pilgrims could run better. About the first thing they took after the fishing rights at Cape Cod was the AMERICAN LUMBERMAN, seeing that any further expansion west would be impossible without the AMERICAN LUMBERMAN to keep them posted on forest tracts and what to do about them. I don't reckon it was called the AMERICAN LUMBERMAN then, or maybe it was before the Pilgrims got it, because after that it never was run by Americans again, but by foreigners from England and other places.

Anyway, there wouldn't never have been any second colony, let alone 13 in all without the AMERICAN LUMBERMAN to tell folks what was growing up and down the coast and back country. All the land grants the English kings give to Lord Baltimore, etc., was done only after Parliament had read up on the country in back issues of the AMERICAN LUMBERMAN. Probably never would have been no war with the French without one of the Louis happened to hear about the AMERICAN LUMBERMAN from a buccaneer

1896 1943

47 Years of Progress

The original White River sawmill shown above had a capacity of 40,000 to 60,000 feet a day. The modern White River plant shown below can cut 350,000 feet a day.



Fir Cedar Hemlock FROM THE SLOPES OF THE *Cascades*

From small beginnings White River has enjoyed steady growth and increasing patronage—based on consistent customer satisfaction. After nearly a half century of continuous operation on the same site, White River has sufficient large virgin-growth Douglas Fir, Western Red Cedar and West Coast Hemlock timber ahead for years to come. Here is an organization to rely on for your postwar lumber needs.

WHITE RIVER LUMBER COMPANY

Enumclaw, Washington

that swiped a copy from a British merchantman who was using it to find out what was growing treewise in Canada. Louis got the thing translated, popped his eyes open, and sent couriers de bois over to Canada for a look-see.

Well, you know the rest. It's in any good history book.

Come the Revolutionary War. Marion the Swamp Fox and Light Horse Harry Lee carried the AMERICAN LUMBERMAN with them all the time to find out where was the best trees to ambush the British in. At Trenton Washington lost his only copy, and the blockade kept the new issues from him. That's why the winter there was so tough. Couldn't find lumber, or logs to make it from, because there was no AMERICAN LUMBERMAN handy to tell them how. And don't forget the Navy. The Constitution was designed by the editor of the AMERICAN LUMBERMAN, and so was all of Paul Jones' ships of the line, and the editor spotted all the hardwood to build them, and printed it right out plain for the Navy men to use. Shucks they wasn't hardly anything Washington's armies or the Navy did that the AMERICAN LUMBERMAN didn't have a hand in. The proof is that you can't find a single copy of it at Mount Vernon, which was Washington's way of punishing himself for losing the one he had at Trenton and causing all the suffering to his troops all winter.

Well, I don't aim to tell all about the AMERICAN LUMBERMAN in this short space, or how it helped win all the wars we were ever in, but that gives you an idea, and certainly proves how little the present editors know about it. Andrew Jackson ordered 500 reprints of a page in AMERICAN LUMBERMAN showing how to set up timber redoubts, and gave them to his engineers and to Jean LaFitte to build the fortifications at New Orleans where he licked Packingham. And you know about Perry at Lake Erie. Well, most of the histories don't tell you all about that fight when Perry says, "Don't give up the ship, boys." That's only half of what he said. The rest of it is, or maybe I better give you the quotation like it really was in full. It was, "Don't give up the ship, boys. This whole —— —— (fill in the blanks with redolent Navy parlance) fleet was built with information from the AMERICAN LUMBERMAN, and the only copy we have left is on this ship." That's what he said, and the proof is that editors always cut things, and they cut from the end. So, the second sentence got lost except in the very best histories.

After the War Between the States, all the Army needed was gun stocks, and stockades, and the Navy was going to steel ships after the Monitor and Merrimac battle. The western expansion was on, and the need was construction lumber. About that time Paul Bunyan came along. He figured the AMERICAN LUMBERMAN was kind of puny for a giant industry, so he took it over, him and the Blue Ox and Pica Pete. Well, you know what happened, of course. It's all in the very best histories, of which there are very few left. The page size was increased to one acre, and the space between columns was wide enough to drive an ox team down. Case you didn't want to drive a team down the space between columns for reading purposes, Paul gave each subscriber a timber easel to mount the issue on, and a pair of field glasses to read it with. There was scarcely a town in the country that didn't have an AMERICAN

R. B. White, Pres. & Gen'l Mgr. Exchange Sawmills, Secy. Louisiana Central Lbr. Co., Secy. Louisiana Long Leaf Lbr. Co., Secy. Louisiana Central Oak Flooring Corp.

NO PERMANENT SCARCITY OF LUMBER

So much news of modern miracles performed with wood is being printed these days that many in the lumber industry itself are beginning to wonder if its use for other purposes will cause a permanent scarcity of lumber.

Such publicity, for instance, tells of an expanding use of wood in the chemical industry. But, it neglects to say that chemicals are derived from the by-products of lumber manufacture or from timber stands that are no good for lumber, particularly ESSCO Lumber.

The fact is that the utilization of wood by-products for chemical manufacture gives the lumber industry additional incentive to expand re-forestation in order to permanently sustain lumber production. Furthermore, by-product utilization will tend to make lumber go further and afford greater value.

Yes, there will always be plenty of lumber and plenty of lumber business. Timber is America's greatest renewable resource. For years, the forest industries have planted and still are planting millions of trees to replace those harvested.

EXCHANGE SAWMILLS SALES CO.
1111 R. A. Long Bldg. **Kansas City, Mo.**

ESSCO END-LOKT

Trade-Marked—Grade-Marked

SOUTHERN PINE • SOUTHERN HARDWOODS • PONDEROSA PINE • WEST COAST WOODS • OAK FLOORING

One of a series of messages to the retail lumber dealer from the key men behind ESSCO.

LUMBERMAN easel on the village green, and a new issue mounted on it every Saturday morning. If there are any old timers that don't remember that it just goes to prove how much illiteracy there was in the country then.

Maybe you never heard of Pica Pete, the editor. Only the very best histories make any mention of him. Probably, that's due to jealously on the part of other publishers and editors, not to mention just plain writers. Old Pica was in a class by himself, and he introduced the production line to American industry, and did it with the AMERICAN LUMBERMAN. First off, Paul logged off North Dakota to get enougn flat land for a print shop. Course everybody knows he logged off North Dakota, but only the best history books tells you why, and now you know. To print a 64-page form, and that's what Pica did, you need 32 acres and a little more just to lay the form down. No need to go into the type foundry with 4,000 men carving type out of slabs, or how the type was set in the forms by 200 typesetters skating on greased skidways over the forms. It's all in any good history of the printing industry.

Nobody has ever said anything about how the Blue Ox spit. Truth is he spit ink—black ink. Just stood at one end of the 64-page form, drew his mouth wide, set his lips just a little apart, and let go. Out came the evenest spray of black ink you ever saw, all over the form. Paper was held on a 32-acre wall standing at the end of the form. After the Blue Ox spit his ink, Pica hitched him to a windlass that let the wall down on the type. Then the Blue Ox run over the form from end to end, and crosswise. That made the imprint, then the Blue Ox windlassed the paper up on its wall, and all the way over on its back. Two thousand Swedes puffing hot smoke on short corn cob pipes were ready to blaze away at the printed sheet and dry it with the hot smoke. Four hundred Canucks tore off the 2 x 10's that held the paper to the wall. Nobody ever did find out how the paper was cut into page size and folded. Paul and Pica did it alone, and never told anybody how. Course, news was coming so fast then that Pica had to get out an issue every 20 minutes for a couple years, and that's how the volume number got so big.

Most of this is a matter of record, but I don't reckon nobody, even Mr. Judson and Mr. Defebaugh, ever found out how they come to get the AMERICAN LUMBERMAN. It was just that Paul and Pica seen the reading habits of the country making another change, and one thing about the AMERICAN LUMBERMAN, it has always been quick to see such changes taking place, and model its policy to meet the new conditions. Paul and Pica wasn't going to be exceptions, and they wasn't going to change their own ways either. So, they decided to sell, but they knew there wasn't another editor in the world could do the job Pica done, or another publisher in the world with the ideas Paul had, so they busted up their type, burned down their print shop which covered four sections of Dakota flat land, and got a little parlor size paper job printed for a couple years. All the time they looked around for somebody they figured could do the new job as well as AMERICAN LUMBERMAN publishers and editors had always done their jobs, and finally they caught sight of this Mr. Judson, and this Mr. Defebaugh. So they sold part of the rights to each, and figured they would get together some time, which they did, as you can read elsewhere in this paper.

That ain't the whole story, but it

(*Continued on page* 231)

FLOOR THE AXIS
WITH WAR BONDS !
...THEN YOU CAN FLOOR THOUSANDS
OF NEW HOMES WITH STREAMLINE!
BRUCE
Factory-Finished
STREAMLINE HARDWOOD FLOORING
Trade-Mark Reg. U. S. Pat. Off.
A PRODUCT OF E. L. BRUCE CO., MEMPHIS, TENN.

Selective logging in Ponderosa pine near Klamath Falls, Ore. Area to left of road has not been logged. Area to right of road has been logged within the past few years.

SILVICULTURE
America's New Science

MANY AND HAZY are the ideas current concerning "silviculture." Probably every forester and lumberman has his own definition of that important but vague word. It has its origin in two Latin words which, when combined, have for their meaning, "culture of the forest." Every authority consulted lends a different shade of meaning to this word. For instance, Professor Joseph S. Illick of The New York State College of Forestry says, "Silviculture is the art of establishing, developing and producing forests." "Silviculture is the science and art of establishing and managing forests to get the best timber products" (from *C. C. C. Forestry, 1937*). Elliott and Mobley use for their definition, "Silviculture—the art of producing and managing forests." And so it continues, ad infinitum, with all definitions having the same essential and basic meaning, but each with its own personal inflection.

From this conglomeration of definitions there has been derived the following concrete interpretation,

Left: Typical clear cutting in Douglas fir of western Washington. Note rough terrain and dense stand of old growth which is evenly sized. Reproduction on clear cut areas is made possible by leaving seed blocks or strips shown projecting from the dense growth behind. Right: Note seedlings in clumps and individually in this selectively logged area of Ponderosa pine.

U. S. Dept. of Ag. Soil Conservation Service photos

What has occurred in the top two photos (destructive logging and forest fire) are direct causes of such disasters as shown in the bottom photo.

which seems most satisfactory of all: Silviculture is the science of growing a continuous crop of trees for the benefit of mankind.

Many are the methods by which silviculture can be practiced. The following is an explanation of those recognized as the more important of these methods.

As with all living things, trees must necessarily struggle for existence, and it follows that some individuals reach magnificent perfection, while a more numerous group, because of some obstruction or difficulty, do not attain this state.

These are the five classifications of trees: Dominant, co-dominant, intermediate, suppressed, and depressed. The monarchs of the woodlands, the tall trees with immense crowns, are known as the dominant trees. Falling behind these are those trees almost as tall and strong but which have not quite the perfection of the dominant trees, those known as co-dominant. The intermediate trees have quite a hard time of it. They receive only a little of the precious sunlight and food. However, if given a chance, these trees would snap out of it and become dominant. Falling at the last of the tree groups are the suppressed and depressed classes. These are the "runts", who have never received enough nourishment. The suppressed trees might grow under extremely favorable conditions, but the depressed group would never reach full maturity under the best of environments.

Naturally, every ambitious forest land owner and lumberman would prefer that all his trees were of the dominant type, which is, of course, not conceivably possible. And surely he would want a sustained yield for the purpose of a constant income and well-forested woodland, which is entirely possible and which is now practiced frequently.

On these two natural desires of the owner and lumberman rests the basis of forest management and, more particularly, silviculture, which term sometimes is used synonymously with the term forest management.

One important phase of silviculture consists of improvement cutting, where man assists Nature in her work by thinning out the undernourished, undesirable trees where crowded conditions exist. The remaining trees are thus enabled to extend their root systems and enlarge their crowns.

To demonstrate selective cutting let us take an ordinary stand of timber. Here we find a certain percentage of dominant trees, having already reached practically maximum growth. If permitted to remain, the process of decay would set in and soon the trees would fall to the ground, useful to no one. As it is, their great branches absorb and shut off the sunlight from the weaker and small trees, and their root systems succeed in taking most of the plant food from the soil, leaving little for the other trees.

Second are the depressed trees, those crooked, diseased individuals which are overtopped and stunted by the larger trees of the forest, and which, if permitted to remain no matter how long, would never make lumber of good quality.

The sensible lumberman or owner removes the two here above-mentioned types, leaving the other trees to grow unhindered. For instance, the co-dominant trees, in a surprisingly short time will develop into the dominant class. And, in chronological order, the intermediate and suppressed trees, no longer under the shadow of the "wolf-trees", (dominant type) will gain a new lease on life, and extend leafy branches skyward.

Now let us take a specific hypothetical case of silviculture to illustrate one phase of selective cutting on a large tract and for an extended period of time; thus portraying a sustained yield operation.

A small mill operator owns, in fee simple, 20,000 acres of second growth loblolly-shortleaf pine. His conception of the life of his mill is approximately 14 years, but upon bringing his problems to a forest manager, here is what he finds: A growth inventory and a timber

Portion of a 20-acre pine woodland selectively cut leaving smaller trees to develop and reseed.

estimate by diameter classes is made, which reveals that a pine tree grows 25" in diameter in about fifty years. The intention of this lumber company is to put the mill on a sustained yield basis, gauging the annual cut according to the amount of timber and the rate of growth. We shall illustrate this example simply by dividing the 20,000 acres into 50 plots, 400 acres per plot.

Conservatively speaking, let us work on the basis that one acre will produce 10,000 board feet of lumber in 50 years, and let us further assume that each 400 acres will yield 4,000,000 board feet of lumber.

Number one grade lumber brings from $18 to $30 per thousand board feet, and dimension timber up to $80 per thousand, which means that the 400 acres should yield at least $100,000 after the overhead, taxes, logging, sawing, and replanting is deducted. The total remaining should bring an income of at least $40.000 per year. This is a good income for any small sawmill. After the first 400 acres are com-

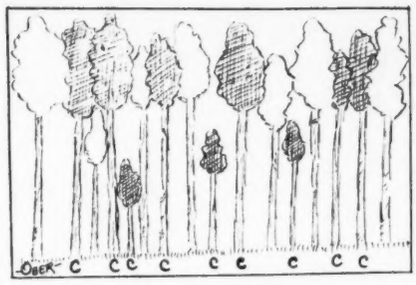
pletely cut over they are replanted with young trees, which are allowed to grow until all other available trees are cut. The principle is this: One plot is cut each year in rotation, thus after fifty years, logging is begun again on the first plot. This is what is meant when we say that timbered land is on a sustained yield basis.

Let us go farther into this plan and observe it from another angle. Small portable sawmills cut an average of 5,000 board feet of lumber per day, consequently this means that 30 or 32 months are consumed in cutting the timber from 400 acres. That allows about 16 months for reseeding, removing the pulpwood, chemical wood and allowing time for other operations. In some cases seed trees are left four or five to the acre, which process will reseed an area very cheaply but not entirely satisfactorily, since natural reseeding is too uncertain. Forestry experts have found that a more perfect stand can be acquired by artificial reforestation.

There are many and diverse methods of removing trees from a forest. The three widely practiced methods are as follows: The clear cutting method, which we applied to our 20,000 acre tract, is the *modus operandi* by which all trees are removed from a certain area. Closely related to the above procedure is the strip method. In this system, the forest is laid off in strips and every other strip is logged. After the first cut-over strip has grown trees large enough to produce seeds, the uncut strips are logged. Thus in time every untouched strip will be harvested. This process is carried on indefinitely, allowing time for each cut strip to regrow. This system is very satisfactory where artificial reforestation is impractical.

The goal of silviculture, as represented by selective cutting, is a forest composed of stands of mixed age, and the procedure by which this is accomplished is to break up all even-aged stands and subsitute a mixed-age group. Nevertheless, the goal of the forest manager, silviculturist, and owner is to allow each tree to approach the maximum state of maturity insofar as it is possible.

Comparatively speaking, selective cutting, which is the backbone of all silviculture, resembles the bailing out of a given amount of water from a spring and then returning for more as the spring refills. If



Example of selective cutting. Shaded trees are to be removed.

one has a full stand of timber that is "overflowing" (old trees dying) he can "bail out" an amount of timber equivalent to 5 or 10 years' growth and then return at the end of the period and "bail out" a similar amount, continuing this process indefinitely, moving from one tract to another in rotation.

Of course, one selective cut does not put a forest into ideal condition. Several successive cuts, however, build up its productive capacity to more than is possible under wild conditions. Proper silvicultural practices probably increase the yield of forest products as much, proportionally, as the cultivation of farm land does agricultural crops.

The practice of silviculture is merely the application of good business principles in the woods. It means that a lumbering operation will be permanent instead of temporary, because timber resources will not be depleted. Forestry for the private owner, if started in time, is never a burden, for it will replenish his depleted forests.

Naturally, these instances mentioned do not provide an absolutely complete picture of the silviculturist's job, as the reader can derive from the definitions of "silviculture" given. His duties include anything that may further the growth and life of his trees. One of his responsibilities is the provision of adequate fire protection. Here we shall not go into details concerning this subject, but its importance should never be minimized. In recent years the U. S. Forest Service, state governments, and various other organizations and agencies have made great advances in the work of fire prevention, and

A fine thick young stand of Douglas fir resulting from seed trees left along the ridge.

U. S. Forest Experiment Sta. photo

Result of good fire protection.

now aid the private owner in waging the never-ending war on the fire hazard.

The art and practice of silviculture has been handed down to us by the Swedes, the Finns, the Norwegians, and the Czechs. These people were natural woodsmen, and the growing, preserving, and the protecting of their forests were as dear to them as food is to us on the battle-front today. Their natural ability and their ingenuity plus the acute shortage of timber made these people appreciate how much their forests really meant toward their actual existence.

To the early Americans, their extensive forest lands were a detriment, not a blessing, and only comparatively recently have silvicultural methods been introduced by forestry pioneers. Below are brief descriptions of only three of the great pioneers and their works, there being other great foresters whose names are too numerous to mention.

Silviculture, as practiced in the United States, was originated by Gifford Pinchot, "The Father of American Forestry." Mr. Pinchot was born August 11, 1865, at Simsbury, Connecticut. Graduated from Yale in 1889, he studied forestry abroad, where he gained a thorough working knowledge of European methods of silviculture, which, even today, are superior to the American system of forest management. Mr. Pinchot undertook the first methodical system of forest management in America at Biltmore, N. C., in 1892. In 1898 he was appointed chief forester. He is chiefly responsible for the national forest system which exists today.

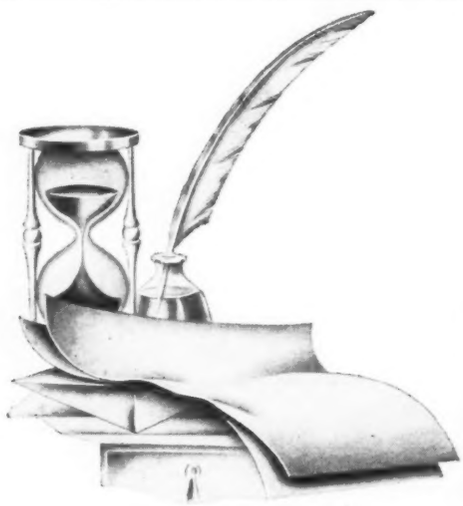
Another of the forestry pioneers was the late F. A. Silcox, former Chief of the Forest Service. Making a lifetime career of forestry, he entered the service in 1905 as a forest assistant, and rose through the ranks swiftly. Appointed chief of the Forest Service in 1933, he did much for the cause of silviculture until his untimely death in 1939.

The lumbermen of the South will never forget Henry E. Hardtner. He was a practical sawmill man, yet he saw more clearly into the future of forestry than any other man, save one or two, of his day. The boundless mutilated forest lands of central Louisiana horrified him, and he saw clearly in his mind's eye the appearance of other spacious forests over the country after the ruthless saw had disfigured them. As a result of this vision, he began preaching the necessity of reforestation. Most people interested in forestry laughed at him—except one, and that person wielded a great deal of influence. President Theodore Roosevelt had been greatly impressed by his and Pinchot's appeals, and under his administration forestry and silviculture as practiced today first came into being. Encouraged by Roosevelt's kind reception of his plans, Hardtner began with renewed vigor his campaign for reforestation. This time he was successful, and great areas of pine trees now stand in Louisiana as monuments to his perseverance.

The demands of the present war effort are making it difficult, and in the case of small operators, sometimes impossible, to cut timber resources in accordance with best

About Anniversaries

[*An Essay*]



Anniversaries are important. Like milestones they mark off divisions of time, measure growth and indicate periods such as adolescence or maturity in either men or institutions made up of men.

Reputations are created by the repetition of individual acts. A good deed does not make a good man, but good deeds, repeated time after time until a habit is formed, develop character—and that character then builds a reputation.

To make a good piece of lumber is a good thing, but a reputation is not made on a single board. Yet when board after board is turned out with such uniformity of quality year after year that it becomes the accepted thing for lumber from that manufacturer to be thought of as GOOD lumber, then a reputation is made.

Of course, other things should be added, such as a habit of making promises and delivering according to those promises. Add to this a sense of fair dealing and you build a reputation to which you can point with pride. We stand or fall upon our reputations.

(For over forty years Kirby has been making lumber and building a reputation).

KIRBY LUMBER CORPORATION
HOUSTON, TEXAS

forest management methods. It is another of the regrettable situations imposed by the greatest of all devastators—war. It is a situation which modern lumbermen deplore.

On the other hand it would not be accurate to imply that because of the war American forests are being slashed with abandon. The days of wanton, reckless forest mutilation are gone forever—war or no war. Even with today's great demand for lumber, scientific silvicultural practices are governing the timber harvest wherever possible.

Immediately prior to our entrance into the conflict American national forests contained 180,000,000 acres of timber land. This was kept as a reserve for future use and as an example of how timbered lands should be properly handled. Our forest experiment stations have given us proved results that "timber is a crop" and can be produced like wheat or corn.

Already much planning and actual work has gone into the postwar condition of U. S. forests. It is clear that silvicultural methods must be improved and speeded up to keep our timberlands green and productive instead of barren and desolate no-man's-lands.

The future of the forests of the United States of America lies in the following three words: Utilization, Research, and Conservation. Of course the silviculturist only holds jurisdiction directly over the latter one of the three named, but nevertheless, all are vitally necessary to the favorable future of our forests.

It is estimated that approximately 65 per cent of the lumber taken from the forests is wasted. That figure is staggering but true. The solution to the problem here steps in, for even while you read this article, new methods of utilization are being discovered by persistent scientists. The forest research laboratories conducted by the United State government and private individual inventors have made great strides in the field of more complete wood utilization.

However, if such developments are to be of any benefit to the nation or to the lumber industry they must not be allowed to die in the development stage. Inventors and research laboratories are neither mass producers nor marketing experts. They cannot be expected to be either. It is up to the lumber manufacturers of the nation to not only keep their minds open to these new developments but also to be willing to invest their capital in the equipment that will put the developments which are fundamentally sound into production. It will take men of courage to step into paths which differ from those they and their competitors have trod for many years—but as always it will be the men of courage who will survive and prosper.

Conservation depends directly on silviculture, in the person of the forest manager and forester. Conservation has been proved practical, and if forest owners will take a hint from the ruined lands of Asia Minor, once luxuriant with vegetation, they will, as soon as possible, begin the practice of silviculture.

And they will, for haven't Americans always overcome every obstacle placed in their path? Our forest lands will be preserved and replenished because America will have the foresight, the vision, and the ingenious devices that she has always brought forth in every emergency.

Data courtesy of The Grayson Co., Prescott, Ark.

GET MORE LUMBER PER TREE

with Mall TRADE MARK CHAIN SAWS!

FELL and BUCK TREES FASTER

5 H. P. MALL gasoline engine chain saw 36" Capacity. Also, available in 24" and 48" sizes.

6 TIME AND LABOR-SAVING FEATURES:

1. Cuts trees to within 2 inches of the ground—accurate cuts—shorter stumps—more timber per tree.
2. 360° index permits horizontal, vertical or any angle cuts.
3. Easy starting, 2-stroke cycle design, gasoline engine.
4. Automatic clutch prevents stalling the engine when saw is pinched or forced too hard. Eliminates hand clutch control. Only necessary for operator to manipulate engine throttle when ready to cut.
5. Safety guard on all models assures full protection.
6. Electric or gasoline engine chain saw sharpeners available for sharpening chains in shop or field.

Write for literature and prices. Demonstrations can be arranged.

MALL TOOL COMPANY

7733 SOUTH CHICAGO AVE. . . . CHICAGO, ILLINOIS

TOXIC AND FIREPROOF TREATMENT FOR WOOD

Toxic treated lumber used for sills and first floor joists in residence building

Structural materials, when subject to certain conditions of exposure against which they have insufficient inherent protection, can and often do suffer from rapid deterioration. It therefore becomes necessary to supplement the inherent properties of all structural materials with chemical or physical resistance to the forces of rapid deterioration to which they may be subjected under certain use conditions. These forces include moisture, chemical action, fungus and insect attack, abrasion, corrosion, heat and fire.

As a result, research facilities are continuously at work devising and improving fabrication processes, formulas and treatments designed to increase the range of utility, and produce longer life and more efficient performance. This applies to wood as well as to other materials, and one of the most notable contributors to making wood a satisfactory structural material under all conditions and in the face of its natural enemies, is the wood preserving industry. Today, treated wood is giving long, highly economical and efficient service in areas infested with termites and lictus beetles, in places where lumber is partly submerged in water or frequently subject to contact with moisture, and in industries where the fire hazard is high.

Wood treating is not a new industry, although many of the treatments and processes used to apply

Applying blow torch test to flame proofed lumber. Test samples were required to meet specifications before lumber was used on government job

them have been developed comparatively recently. Wood treatments divide themselves first into two classes, oil borne treatments and water borne treatments. These, in turn, divide themselves into two more classes, pressure treatments and non-pressure treatments (dipping, spraying and brushing). The industry started with the use of creosote, and still uses it extensively. The direction of new developments has been toward finding new preservatives for uses where creosote is not satisfactory. These include structures used for human occupancy and the storage of materials that readily absorb the odor of creosote; for lumber that must not be discolored in the treating process; and lumber which is to be painted after treatment. Creosote is strongly antiseptic. Its use as a preservative is for railroad ties, and for piles, timber, poles and posts to be used where the characteristics are not objectionable.

Various mixtures of creosote are employed, depending upon the use to which the lumber, poles or posts are to be put, and to some extent, the climate in which the material will be used. For instance, railroad ties are usually treated with a mixture of 80 percent creosote and 20 percent coal tar. In many parts of the West, petroleum and creosote are mixed in equal parts by volume for poles carrying communication and power lines, and for cross ties. In hot, arid climates poles so treated develop fewer seasoning defects. For marine piling in salt water, creosote is used without any admixture. For protection against marine borers there is no substitute for creosote.

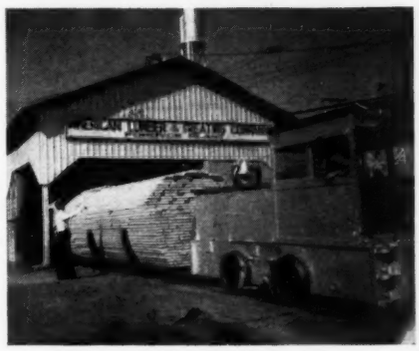
For the retailer, these creosote treatments are largely confined to fence posts and farm items. Creosote is an effective repellent of fungi and destructive insects. The dealer's interest is principally in the clean treatments, both pressure and dipping, depending upon the use to which the lumber is to be put. The purposes of such treatments are to fortify the lumber against attack by fungi or insects, to give it greater resistance to rapid moisture change, to insure it against sap stain, or to increase its fire retardant qualities.

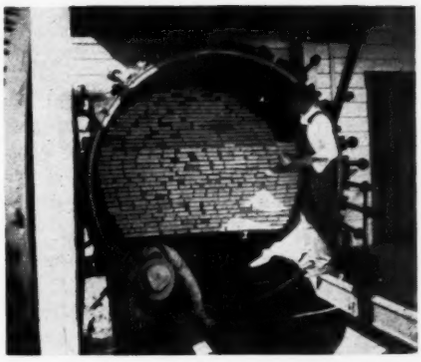
For millwork and other carefully and finely finished wood, dipping is to be preferred as a treating method. With a clean oil borne solution the dipping method will leave a surface uncolored or only slightly but uniformly tinted, and with the surface entirely unimpaired. Sash and doors dipped in a clean solution can receive end grain penetration up to several inches. It is this protection at the joints that is most important in sash, and in exterior doors where the presence of moisture and the capillarity of wood might lead to decay in the absence of a toxic and moisture resistant seal. Oil borne solutions for carefully finished wood are designed to effectively seal out moisture, prevent sap stain, and repel fungi and damaging insects.

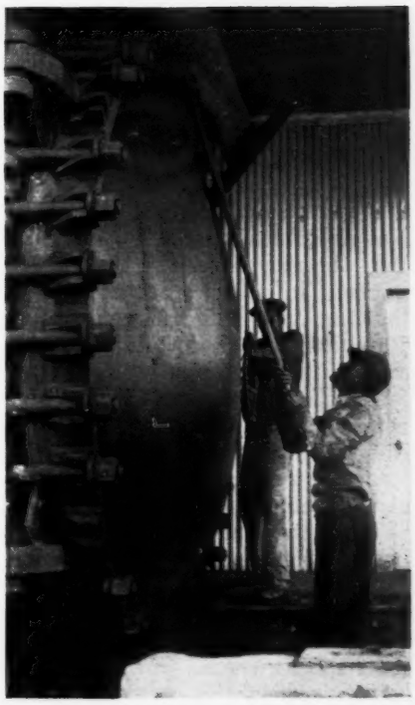
For dimension and boards where protection against decay and insects is desired, the water borne toxic salt solutions are usually applied by the pressure process in closed cylinders. Pressure treatments by which very deep penetration can be obtained will make even the secondary woods stand up and give economical service.

The amount of treated lumber used annually has been increasing steadily, and the greatest proportionate gains have been made in the use of salt treatments. Creosote treatments have been standard practice for numerous types of timber usage for many years, but the increases made in new uses for treated lumber have been principally in the field of salt and other clean treatments where fully protected clean lumber is desired.

The use of toxic treated lumber offers the dealer opportunities to sell longer life and better performance. Every retailer is familiar with dip treated millwork products, their advantages and availability, but many dealers are not well enough acquainted with pressure treated lumber products to enable profitable handling and merchandising. The reason for this is that retailers have not received the merchandising help for selling treated lumber that has been made available to them by manufacturers of other products. Pressure treated lumber is available for regular yard stocks through regular distribution channels. What needs to be done by the manufacturers of pressure treated lumber is to promote the advantages of using it both with dealers and with consumers. When that is done, and with facilities now







Top to Bottom.—Loading boards preparatory to placing in cylinder for pressure treating. Backing load of boards into pressure treating cylinder. Disconnecting track after lumber has been backed into cylinder. Sealing the door on pressure treating cylinder after tracks have been cleared

Load of dimension still emitting fumes after having been subjected to pressure treatment

Examining test specimen from charge just treated. Purpose is to be sure penetration was deep enough

available for producing pressure treated lumber in quantity, its use will probably improve rapidly. It has been stated that properly treated lumber can add only about two percent to the cost of a home.

Fireproofing involves the same processes as toxic treatment, but with chemicals designed to provide flame resistance. One method of applying fireproofing is by means of brushing or dipping to give surface protection. This is generally used on structures that have already been built, and where a degree of flame-spread protection is desired. The other method of applying fire protection chemically is by pressure impregnation, which forces the fire retarding chemicals deeply into the wood fibers. Good fireproofing requires from 10 to 20 times as much chemical as toxic salt for preservation.

Although pressure fireproofing of lumber dates back to about 1910, the past year has accounted for more pressure fireproofed lumber than all the years that preceded. Army and Navy specifications principally have been the reason for the tremendous increase in volume. Production for the past year lies between 60 and 70 million feet. Before the war only about one million feet was pressure fireproofed each year. In the past year of great war industry expansion and Army and Navy base construction pressure fireproofed lumber has been used in hangars, ordnance plants, and numerous other types of structure. One ordnance plant alone used three and one-half million feet. A soap company has used it in roof construction over the naphtha room. Currently it is being used in the construction of synthetic rubber plants and aviation gasoline refineries. The oil industry, according to present indications, will be one of the largest, if not the largest market for pressure fireproofed lumber after the war. This widespread use of pressure fireproofed lumber in war industries presenting great fire hazards clearly indicates that it will project the use of lumber into many new fields after the war.

As yet there is no concession in fire insurance rates where fireproofed lumber is used, but insurance groups are conducting tests on fireproofed lumber with a view to rating it as a material. One of the best arguments for fireproofed lumber is the increased occupational value of a plant thus protected.

One of the most recent developments in the field of pressure-fireproofing is the treatment of plywood, now being processed on a commercial scale. Under fire conditions, tests show that fireproofed plywood and glued laminated structural pieces do not defoliate. Some fireproof treatments, have anti-check and anti-shrink properties.

Life of the chemicals used for toxic treatment and fireproofing indicates that such treatments have relatively low solubility, and the high concentrations used indicate but slow loss of chemicals under exposure to conditions not involving direct and sustained water contact. They can be used on all ordinary outdoor exposure subject to normal weathering, and will last many years. Protected with a good paint film, they will last indefinitely.

The average cost of fireproofing was about eighty dollars a thousand feet in pre-war days. Now, because many more pressure treating plants have entered fireproofing production to meet the needs of war, the cost is about forty dollars a thousand. After the war the dealer will be able to order lumber treated with a combination of chemicals giving protection against decay, termites and fire at an even lower cost. The average dealer generally cannot tell what use is going to be made of lumber which he orders for yard stock, before he orders the material, and often when he sells it. Therefor, not knowing whether the lumber should be fireproofed for superstructure use or toxic treated for foundation work, lumber treated for both uses is adviseable.

There are 185 pressure treating plants in the United States. Systems of distribution which have been worked out in various regions are leading to the acceptance of treated lumber as a standard construction material. The plants are equipped to impregnate with creosote, chromated zinc chloride, Wolman salts, zinc chloride, zinc meta arsenite, and fire retardants. Trademark brands established for the protection of both dealer and consumer have been increasingly used in the industry. It is expected that such product identification will grow in importance after the war.

Although the war has dislocated the supply and distribution of treated lumber, the wood preserving industry has continued its research and development program, and has improved plant operations and materials, all of which will effect economies in production and improvements in performance.

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WOOD'S ROLE

By CARLILE P. WINSLOW, Director, Forest Products Laboratory. Forest Service, United States Department of Agriculture

The Forest Products Laboratory is this year rounding out a third of a century of research in wood and other materials harvested from trees. It is appropriate, then, to pause momentarily for a look backward to assay what progress has been made toward its goal—the more efficient utilization of our forest wealth by the entire nation.

It has been estimated that 120,000,000 tons of wood were used during 1942 as compared with 100,000,000 tons of steel. This fact alone bespeaks fundamental dependence upon our forests in this struggle to retain freedom and set the stage for a better world. But the immense variety of materials we get today from trees tells even more eloquently the story of the progress that has been made.

A comparison of the uses to which wood was put during the first World War and those made of it today shows many parallels. But in the list of uses for World War II there appear also new products unheard of 25 years ago, among which plastics are outstanding.

Aircraft, as made and used then and now, exemplify perhaps more strikingly than any other specific implement of warfare the advances in wood utilization achieved during the last 25 years. Wood planes were the rule in 1917-18. When this nation entered the war the Laboratory was called upon to do extensive research in the design of wood aircraft parts, the development of glues and finishes, construction of wood propellers, kiln drying of airplane woods, and other basic problems.

All these problems are again under investigation—but there the comparison, for all practical purposes, ends. Today the materials of which wood aircraft are built differ vastly from those of 1917-18, although the basic constituent, wood, remains the same. Sitka spruce, whose combination of light weight and high strength properties is unexcelled among native species, is still the standard for construction of ribs, wing beams, and similar structural parts.

Sitka spruce, however, is no longer so plentiful as formerly, and consequently the need for studies of other woods to determine their weight-strength characteristics for airplane designers has become much more acute. The Laboratory has been able to answer this need with accurate design values for western hemlock, noble fir, Douglas-fir, and other species.

Plywood has become a material vastly superior to that available for aircraft in World War I. Whereas in 1917 certain "waterproof" plywoods were made and used, progress in the development of water-resistant glues since then has resulted in a product much more stable in its dimensions and properties. The advent of synthetic resin glues has been very largely responsible for these gains. In recent years these glues have appeared in increasing number and with varying properties and uses.

One of the Laboratory's major tasks in both wars has been to

Above. Treated with urea, wood becomes pliable. W. Karl Loughborough, discoverer of the process at the Forest Products Laboratory, is shown here demonstrating its possibilities. The process is still undergoing laboratory explorations.

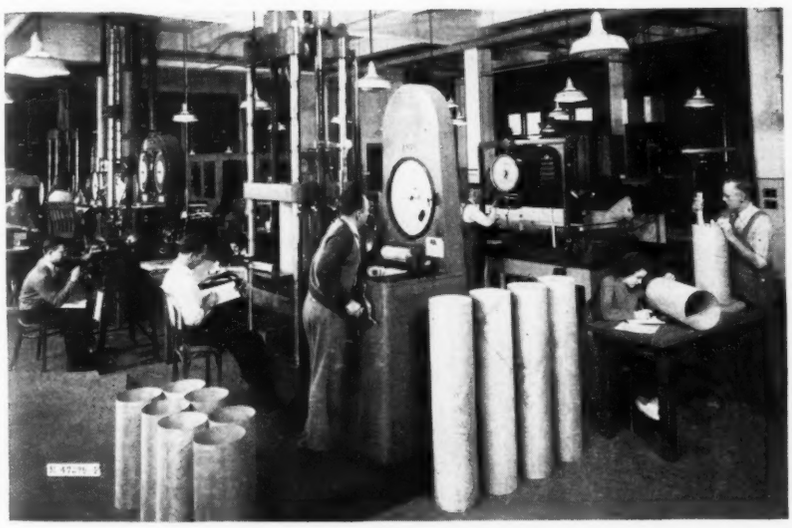
study glues and gluing processes. In World War I, blood albumin and casein glues which had markedly improved water resistance over other glues then in use, were developed for the Bureau of Aircraft Production. A regular testing and inspection program was carried on for plywoods made at different plants.

Similar services are today being performed for the Army and Navy. Nearly 100 synthetic glues have been evaluated, and the work continues as new glues are sent in by manufacturers. Specifications, reports, and manuals have been prepared which include specific directions for the testing and inspection of glues and plywoods at the factory. Standards have been set up by which acceptance or rejection of aircraft materials and parts is determined.

One need only compare the single-engined "flying crates" which were the standard fighting planes of World War I with the enormous 4- and 8-engined cargo and transport ships now in service or being experimentally built, to gain some conception of the vital need for such design information about wood. Plywood is the material selected to build a giant 8-engined flying boat now under construction on the West Coast. This plane is reported to be bigger than anything now in the air—if placed on a football field its wing tips would overlap the goal posts. It is designed to carry 60 tons of cargo.

Various other cargo and transport planes are being built in the United States in whole or in part of wood and plywood, among them the twin-engined Curtiss Caravan, not to mention thousands of gliders and training planes. The exploits of Britain's speedy plywood Mosquito fighter-bomber, first plane to bomb Berlin in daylight, are already familiar to us all.

IN TODAY'S WORLD



One of the testing floors of the Forest Products Laboratory where research in wood, plywood, plastics, and other materials is carried on.

Classroom at the Forest Products Laboratory during a course in container construction given to enlisted men and civilians of the Navy Department.

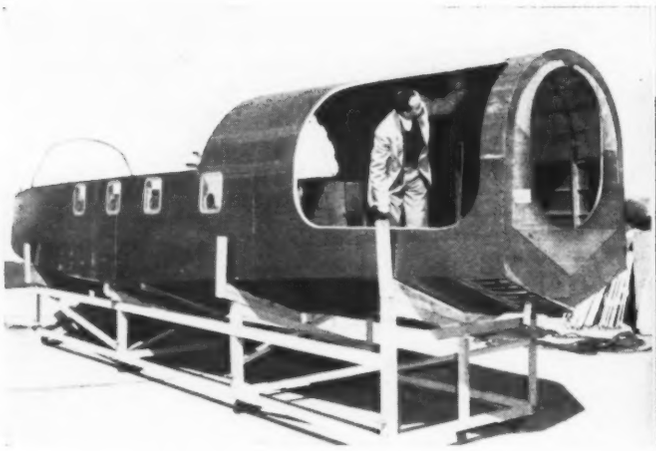
Molding Wood

The development of synthetic resins has made possible the modification of normal wood properties —notably, strong control over its tendency to shrink and swell with changes in its moisture content. A form of resin-treated wood, "impreg," which has a high degree of moisture resistance was developed at the Laboratory. When sheets of resin-treated veneer, or "impreg," are laminated and compressed under heat, part of the resin exudes to form a bond which welds them together into another product, "compreg." The density of this latter material may be controlled by the amount of pressure applied. It can be molded, has a glossy surface nearly as hard as that of glass, and is being used experimentally for aircraft propellers and other purposes. New processes and devices for treating and molding impreg and compreg have been devised at the Laboratory to help speed manufacture.

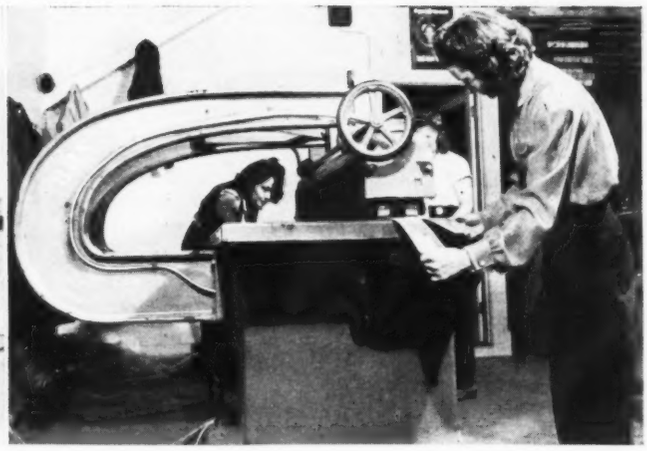
Treatment with synthetic resins has also resulted in the production of a new type of paper plastic having much higher tensile strength than conventional paper plastics and comparable in many respects to light aircraft metals. This material is called "papreg"; it does not scratch easily, is highly resistant to moisture, and can, of course, be molded to various shapes. It is under consideration by the Army and Navy for manufacture of airplane parts, and several manufacturers have undertaken its production.

Two other types of plastics are under development. One is little changed in appearance from ordinary wood; it consists of wood treated with urea, a cheap chemical, to make it moldable. Several variations of the original discovery, made during chemical seasoning experiments, have been worked out to produce materials of varying properties.

The other plastic material comes in two forms, as a molding powder or a molding sheet. It is made from hardwood waste. The acid hydroly-



Fuselage of a Navy glider shipped to the Forest Products Laboratory for tests of the materials and construction used.



Women employed at the Forest Products Laboratory glue two strips of veneer in an electrostatic press.

Testing the buckling strength of thin plywood cylinders in compression to obtain design data for aircraft engineers.

sis method employed gives it its name—hydroxylin.

The hydrolyzed wood molding sheet is an offshoot of the molding powder and possesses similar properties. It is made in thin, paper-like sheets, which are laminated together under pressure. Even in its present early stage of development, it offers promising possibilities for wood-waste utilization during and after the war.

All these products were unheard of in the last war. Nor do they by any means represent all that has been done in the improvement and modification of wood as a material for the aircraft engineer.

Wood Construction

In the construction field, numerous advances have been made since World War I to keep wood use apace with today's demands for improved materials and methods of building. Prefabrication has entered the housing field, particularly for low-cost housing; timber connectors have made possible the fuller utilization of wood's natural strength and adaptability for heavy construction; and methods of gluing and laminating relatively small lengths of wood into large members, either straight or curved, have made of wood a practical structural material for modern factories, warehouses, hangars, auditoriums, and other buildings requiring wide floor areas unimpeded by supporting columns.

Engineering analysis of the principles involved in all these types of construction, as well as similar studies of conventional wood members, have transformed structural designing within the past 25 years from its old handicraft stage to a basis on which structural engineers can operate soundly and with mathematical exactness.

The Laboratory has carried out active research in all these fields. Prefabricated housing to a great extent is founded on design principles established by its studies. The basic design of plywood panels employing the "stressed skin" principle was worked out at the Laboratory during the 1930's. This type of panel is playing a steadily more prominent role in mass production of low-cost housing for war workers. Recently three big West Coast door manufacturers announced plans to produce such panels in quantity.

In essence, this unit system for floor, wall, and roof construction consists of a panel having two plywood faces glued with water-resistant synthetic glues to a solid wood framework. Within the space between the plywood faces, insulation, electric wiring, water pipes, heating ducts, and other accoutrements of modern homes can be provided for at the factory. Exterior and interior finishing can be applied in advance by machine methods. With the stimulus afforded by war demands for mass housing, this type of construction gains a promotion advantage that might have taken years to attain under peacetime conditions.

Glued, laminated arch construction is being employed to erect numerous hangars, aircraft assembly plants, airplane modification buildings, drill halls, auditoriums, and other big buildings. Its principles were also worked out at the Laboratory during the 1930's, and the first building to use such arches in the United States was erected on the Laboratory's grounds in 1935.

The employment of metal connectors to form joints between wood members in heavy construction has been estimated to have saved some 400,000 tons of steel during 1942, besides assuring joints 4 or 5 times as strong as anything possible with bolts alone. In shipyards, factories, warehouses, and similar buildings, not to mention railroad bridges, radio towers, etc., wood has been kept in the forefront by these circular pieces of metal.

One of the prime objectives of the laboratory is to achieve shipping space economies. Brig. Gen. J. S. Hatcher, chief of the Ordnance Field Service of the Army recently estimated that, on an average, four ships now can carry the weapons which formerly required five, and that the saving in shipping space on some Ordnance items has been as high as 60 percent. Redesign of crates and boxes, he said, has meant a saving of 58,000,000 board feet of lumber worth $2,500,000. Another Army officer has estimated that more than $50,000,000 in shipping costs has been saved by packaging improvements. Much of the saving in cubage was accomplished by "knocking down" big machine

. . . . doing everything possible to aid operators in producing lumber for war purposes

Appalachian Hardwood Manufacturers, Inc., representing the Appalachian Hardwood Industry, is devoting all of its resources and experience to assisting operators in solving the many problems they are encountering in maintaining their splendid volume of production for war purposes.

As one of its contributions toward winning the war, the Association is extending every possible co-operation and service to all Appalachian producers, whether members or not.

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Rich soil, ample rainfall, perfect drainage and mild climate in the Appalachian region combine to produce Hardwoods of superior quality and texture.

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TIMBER
For Today
TREE FARMS
For Tomorrow

Forty-six years before the "American Lumberman" commenced serving the lumber industry of this country, the first sawmill was established in the Pacific Northwest. For more than a century these forests have produced timber for the homes, churches, schools and factories of growing America.

The Douglas fir region is shipping about 6,000 carloads of lumber every week to the ship-yards, airplane factories and other war projects in the United States and overseas.

The region has 1100 sawmills and 600 billion feet of virgin timber, and it also has 7,500,000 acres of young growing trees. These tree farms spread as more operations follow the industry's code of Forest Practice and as control of forest fires improves.

The Pacific Northwest is putting its best mature timber into War today—and is growing new crops for the needs of Peace tomorrow.

Douglas Fir • West Coast Hemlock

WEST COAST LUMBERMEN'S ASSOCIATION

Western Red Cedar • Sitka Spruce

assemblies and packaging the smaller parts more compactly.

The problems of packaging have become immensely more complicated because of the more complex nature of this war. In 1917-18 the problem was to ship war materials mainly to a single destination—France. Now they go to England, North Africa, Russia, the Near East, Australia, India, China—to climates ranging from hot, humid jungle, to the frozen tundra of Siberia.

Boxes must often serve as their own warehouses and be built accordingly. The packing specialists must know their box and crate designs, but they must also be familiar with the uses and properties of cushioning materials, waterproof and greaseproof protective liners, oils and other substances used to coat guns, motors, and similar delicate mechanisms.

Packaging work is done for the Army Ordnance Department, Army Air Forces, Medical Corps, Engineer Corps, War Food Administration, and other agencies.

Seasoning of Wood

Again, as in the first World War, seasoning has become a critical factor in lumber production for products ranging from gunstocks to airplanes. This time, however, we are equipped with a better arsenal to fight this phase of the battle of production.

Chemical seasoning as developed at the Laboratory has helped to speed the drying process and cut losses from checking and degrade. For example, early in this war seasoning of 3-inch Douglas-fir pontoon planks took 28 days, and even then about a fourth of the stock dried had to be thrown out because of degrade. Chemical seasoning has cut drying time to less than a week and degrade losses to 1 or 2 percent. In World War I, the Laboratory worked out kiln schedules that reduced drying time for 3-inch artillery-wheel stock—then air seasoned for 3 to 5 years—to 90 or 100 days, and this achievement was highly regarded.

Shoe-last blocks and shuttles for textile mills are among other wood products in the seasoning of which chemicals are applied to great advantage. Substitute woods for dogwood shuttles are being hardened experimentally with chemicals to replace this scarce, expensive species.

Gunstocks are an essential part of the semiautomatic rifles and carbines needed to equip our growing armies. Black walnut is the preferred species. Faster schedules for drying of gunstock blanks are being experimentally developed. To alleviate the drain in our black walnut resources, other species, notably black cherry, have been studied as substitutes. Black cherry has about the same specific gravity range as black walnut and comparable shrinkage and other characteristics, Laboratory tests have disclosed, and exists in considerable quantity.

Wood for Ships

Closely linked to seasoning and other wood studies is the work being done on shipbuilding. Recently a Laboratory staff man returned from Ecuador, where he surveyed the potentialities of a wood shipbuilding program for inter-American commerce. Considerable study has been devoted to seasoning problems involved in shipbuilding. Likewise, the gluing of laminated keels and other parts of boats is under investigation as a result of the discovery that some of the modern water-resistant glues react unfavorably in salt water. Much of this work is being done directly for the

Navy's Bureau of Ships

At sea, as well as in the air and on land, warfare has undergone marked changes since 1918. The submarine, the airplane, the aircraft carrier, the deadly, darting, torpedo-carrying PT boats (themselves built largely of plywood) are either entirely new or vastly superior to their World War I ancestors. Wood is used for decking of battleships as well as "flat-tops," and such craft as subchasers, minesweepers, landing boats, and attack barges are built largely of it. A huge volume of white oak and other species is being used to build them. New knowledge of seasoning, gluing, plywood molding, fireproofing with chemicals, and fabrication methods is in demand to facilitate their production.

Wood for Chemicals

Chemically, wood is a storehouse of vast wealth as yet only partially tapped. We get from it cellulose for explosives, cellulose acetate for plastics and photographic film, shatterproof glass, airplane fuel dopes, lacquer, cement, varnishes, turpentine for flame-throwers, charcoal for gas masks, synthetic fibers for rayon and other textiles, extracts for tannin and dyestuffs, and alcohol for rubber and explosives manufacture.

In World War I the Laboratory assisted in the development of a

wood cellulose suitable for nitration into gunpowder. Likewise, it took part in the establishment of wood alcohol plants, then needed chiefly for explosives manufacture. New processes of cellulose purification have produced a vastly superior product for explosives since then. While some wood products, such as naval stores, are old, their uses at today's battlefronts were born with blitzkrieg.

Lignin, the once useless by-product of paper mills, is getting more than passing attention in the hunt for new products. Laboratory hydrogenation of this chemical enigma is producing a growing list of substances, some yet unnamed. From among them may come alcohols, phenols to bolster our plastics supplies, fuel dopes for airplanes, and lacquers. Meanwhile, lignin is also being investigated as a source of bonding agents for molded wood and paper products.

Wood in Tomorrow's World

To utilize wood properly in fighting this war, we have had to train many thousands of workers who are now skilled in handling lumber, plywood, glues, plastics, and the myriad other products of the tree. At the Laboratory alone, up to June 1, 1943, some 3,600 military and civilian inspectors of wood packaging, aircraft construction, and shipbuilding received training in special courses given for the War and Navy Departments. Altogether, a sizeable reservoir of manpower should be available after the war to help maintain wood's position as a leading factor in our economy.

What the impact of all this development of forest resources will be upon tomorrow's civilization, only time can tell. Some things are self-evident, however. The future will be more and more a synthetic world because of our greatly expanded productive capacity for plastics, rayon, rubber, and similar products. The ingredients for much of this new industrial production will come from the forests along with those products on which our civilization is today so largely built.

Wood today is no longer just boards and planks and timbers—however important these still are. It is food, and clothing, and many things the list of which is daily lengthening. And the forest storehouses from which it comes will, with proper care, be with us always. The potentialities are vast and challenging.

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A Wood Alloy

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For the post-war era, Pluswood offers you a brand new technical material, high in aesthetic value, with an exciting weight-strength ratio. A wood alloy, made by a chemico-mechanical process, it possesses structural strengths exceeding those of many metals. A non-conductor with amazing qualities of density and toughness, Pluswood can be made to your pre-determined engineering description. Thick or thin, pliable or rigid, this wood of new wonders is available in thickness ranging from 16 inches to 1/16 of an inch, and in any size up to 7 feet by 18 feet. Highly resistant to swelling, shrinking, corrosion, fire, and thermal shock—Pluswood will retain its dimensional stability so completely that only micrometer measurements indicate changes.

A dependable, responsible organization stands behind Pluswood from forest through saw mills, veneer mills and factory — established by the Lullabye Furniture Corporation, since 1897 America's foremost manufacturer of juvenile furniture. Pluswood maintains a laboratory service that you are urged to use without obligation. Write today for an engineering data bulletin that will give you more complete information.

WOOD Select northern birch or maple — cut from vast tracts of timber reserves in northern Wisconsin and Canada.

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RESIN Impregnated into veneers by methods and techniques developed by Pluswood research.

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HEAT 300 K. V. A. high frequency electrostatic generating unit—largest in the country for this purpose—delivering 540,000 B.T.U.'s per hour.

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PRESSURE Largest and most powerful press in the plywood industry—with total pressing capacity up to 5,000,000 pounds.

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ALGOMA FOREST PRODUCTS, Ltd. Bruce, Ontario, Canada

The Lumberman Poet

DOUGLAS MALLOCH, The Lumberman Poet, also known as "The Poet Who Made Living a Joy" to the millions of readers of his syndicated poems in the daily newspapers throughout the United States, joined the AMERICAN LUMBERMAN staff in 1903 and was still associated with this journal in the active capacity of associate editor at the time of his death on July 2, 1938. Born in Muskegon, Mich., on May 5, 1877, young "Doug" grew up on the edge of a pine woods and spent his boyhood among lumber camps, sawmills, and lumber yards. Only the day before his death, he had arrived at his summer home, which he still maintained near Muskegon. There he usually spent the summer months in rest and relaxation with his family, passing on to his public through his poems the inspiration he gained from his communion with the great outdoors.

Douglas Malloch was internationally known as a poet, orator, humorist, lecturer, radio speaker, and entertainer who could charm his audiences with his simple but inspiring philosophy of life and hope. Douglas Malloch loved life and passed on to his legion of admirers through his syndicated feature called "Lyrics of Life" in the daily newspapers all over the country, and to his audiences, his radiant and cheerful personality, for he possessed an unconquerable optimism. It has been said that Malloch wrote concerning the best things of the past, the beautiful things of the present, and the encouraging things of the future. "The Lumberman Poet" was master of Anglo-Saxon and in his many hundreds of poems he used only short, expressive, clean-cut words. It may also be said that never in all the long years of his writing did he pen a word of pessimism or gloom, of cynicism or doubt. Even the poems of his later years, written after he had passed through many trials and worries, still maintained a high note of faith, cheerfulness, fun, and sheer joy of living. Many of The Lumberman Poet's poems are contained in his books, of which the following is a complete list: *Tote-Road and Trail, In Forest Land, Resawed Fables, Oh, Weep No Weeps, The Heart Content, Come on Home, Be the Best of Whatever You Are, Little Hop Skipper, and Live Life Today.*

A memorial to Douglas Malloch has been erected at the Granville Avenue Methodist Episcopal Church in Chicago, which he attended; the plaque bears the inscription from one of his poems:

"Four things I think make life
worth while,
To love, to hope, to help, to smile."

and this, in his own clear style, sums up his philosophy and life.

The Illinois Women's Press Association is sponsoring establishment of a Douglas Malloch Memorial in the form of a Freedom Forest, in co-operation with the United States Forest Service.

The Muskegon County Museum is planning to dedicate in September a Douglas Malloch room in the local museum.

Some of The Lumberman Poet's better known poems and a few of his epigrams are reprinted here.

WHITTLE YOUR TROUBLES AWAY

When it's looking a little bit blue at the house
And a little bit gray at the mill,
When she wants a piano, a car or a blouse,
Or the business is rottener still,
There is one consolation especially fine
When matters are blue or are gray—
Just get out your knife and a splinter of pine
And whittle your troubles away.

When notes are maturing and projects are not,
The future is harder to see,
When prices and profits are far under what
You thought they would certainly be,
When creditors always are right on the job
And debtors are slow on the pay,
Don't give up the battle, don't sorrow and sob—
Just whittle your troubles away.

I reckon there isn't a trouble on earth,
Or was since beginning began,
That really and truly was actually worth
One-half of the worry of man.
I figure there isn't a trouble or care
Tomorrow to come, or today,
A single vexation on earth anywhere,
That man cannot whittle away.

There's something so sweet in the smell of the pine,
So graceful the curl of the wood,
A scent from the shaving as pleasant as wine
That gets you to feeling so good
That things that were tangled are straightened at last
And labor is simple as play.
Whenever you think you are stuck good and fast
Just whittle your troubles away.

Religion is something a man really needs,
The Bible's a friend and a guide;
But more consolation as living proceeds
The Lord has seen fit to provide.
A jack-knife, I think, is a help unto grace,
And you may reach heaven some day
If, when there is worry all over the place
You whittle your troubles away.

TODAY

Sure, this world is full of trouble—
I ain't said it ain't.
Lord! I've had enough, an' double
Reason for complaint.
Rain an' storm have come to fret me,
Skies were often gray;
Thorns an' brambles have beset me
On the road—but, say,
Ain't it fine today!

What's the use of always weepin',
Makin' trouble last?
What's the use of always keepin'
Thinkin' of the past?
Each must have his tribulation—
Water with his wine.
Life it ain't no celebration,
Trouble? I've had mine—
But today is fine!

It's today that I am livin',
Not a month ago.
Havin', losin', takin', givin',
As time wills it so.
Yesterday a cloud of sorrow
Fell across the way;
It may rain again tomorrow
It may rain—but say,
Ain't it fine today!

The above poem, which is widely recognized as the Lumberman Poet's masterpiece, is reprinted just as it appeared in the AMERICAN LUMBERMAN in 1910, and as it appears in the book "The Heart Content"; the poet later transposed the first and second verses, thinking this a more effective arrangement. In 1914, about the time World War I broke out it was said that this was one of the most widely quoted poems in the English language and its popularity has not lessened during the years.

"The man who resolves to die fighting often fights so well that he does not die."

"The trouble with some knot sawyers is that some are knot sawyers and some are not sawyers."

"The best souvenir a man can take home from a convention is an idea."

"Don't look for a smaller job or the boss will look for a bigger man."

"Heaven is not reached at a single bound, nor Hades at a single bump."

Lumber, laughter and love are the greatest things in the world, and you need all three to make a home.

"The only thing that we think of that resembles international law is the Doyle rule."

"They who scoff at politeness forget that it is the polish that shows the grain."

The forester has to study a good many branches.

"Don't be one of the contributors to the endless chain of a rumor."

The way to face the future is to turn your back on the past.

One way to keep business good is to keep goods that keep business.

Keep your brain clear; you can't buck much wood with a dull saw.

"Our fathers believed that a good way to shield a boy from temptation was to shingle him."

"A rough bark may cover a sound heart."

"There is no short cut to long experience."

There is only one better man than the man who stops to think and that is the man who thinks without stopping.

Douglas Malloch, 1877-1938

IMMORTALITY

For there is hope of a tree, if it be cut down, that it will sprout again—Job 14:7.

There is no end of life. The tree that falls
Beneath the ax, or shattered by the storm,
Gives up but that which was its show of strength;
Its wealth of blossoms and its breathing leaves,
The trunk that marked the progress of its years.
These only die. The life sap still is there,
Still there the soil, still there the bending sky,
Still there the sun that warmed its crown of green,
Still there the springs that fed its hidden roots.
So, from its shattered form, new life shall come,
New leaves put forth, new blossoms deck the glen,
And where it was the tree again shall be.

There is no end of life. The man who falls
But dies as dies the trunk of fallen tree,
To live again in richer garb and hue.
For, in the tree, life's essence still is there,
And, in the man, the soul may never die—
It does but drop the thing that once it was,
Its earthly form. Its life it still retains
And, mounting upward, lifts its golden bloom
Where, in its earthly shape, it might not reach.
Yea, mounting upward, casts its petaled shower
Upon the footsteps of the mighty throne
That gave it life. Trees fall, men die, worlds change,
But life lives on and on. For to the soul
There comes no death, there is no end of life.

GOOD TIMBER

The tree that never had to fight
For sun and sky and air and light,
That stood out in the open plain
And always got its share of rain,
Never became a forest king
But lived and died a scrubby thing.

The man who never had to toil
To heaven from the common soil,
Who never had to win his share
Of sun and sky and light and air,
Never became a manly man
But lived and died as he began.

Good timber does not grow in ease:
The stronger wind the tougher trees,
The farther sky the greater length,
The more the storm the more the strength;
By sun and cold, by rains, and snows,
In tree or man good timber grows.

Where thickest stands the forest growth
We find the patriarchs of both,
And they hold converse with the stars
Whose broken branches show the scars
Of many winds and much of strife—
This is the common law of life.

THE FRIENDLY TREES

The friendly trees: I call them so,
  Because they always seem to bend
Above the world, all things below,
  So like a comrade, like a friend.
I'm sure that many a blossom looks
To many a tree in shady nooks,
And sees a friend who will not fail
In summer's sun or sudden gale.

The friendly trees: I call them, when
  They lean above the torrid way,
And spread their branches over men
  And shade the path, refresh the day.
In land of pine or land of palm
They stand in their cathedral calm,
A sanctuary set apart
To soothe the eye and cool the heart.

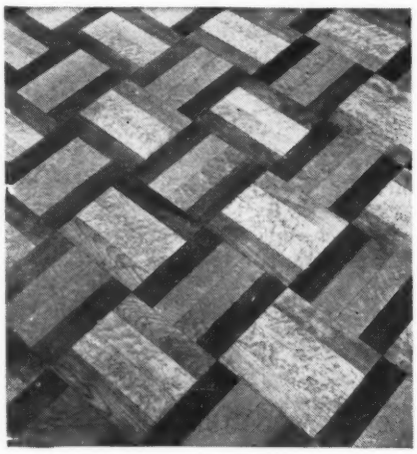
The friendly trees: I call them such,
  Because they always seem to stand
With earth and heaven, both in touch
  This land, and then that other land.
The arctic needle, tropic frond,
Both speak of other lands beyond—
The friendly trees to me appear
A little of God's friendship here.

FLOORING FROM HARDWOODS

The popularity of hardwood flooring has increased rapidly as its merits and advantages have been made known, until today it is almost impossible to enter a home or public building which does not embody a hardwood floor. For many centuries hardwood floors have demonstrated their superiority and serviceability. Their elegance, their infinite variety of grain, sometimes in the same species of wood, their color harmony through staining and tinting, and their adaptability to the most beautiful and lustrous finishes have contributed to wide acceptance.

The earliest mention of flooring now known is found in I Kings: 6, 15. This was in 950 B. C., when King Solomon summoned the floor layers of the Holy Land to cover the floor of "the house" with planks of fir. An unusually interesting example of the longevity of hardwood floors is offered by the huge banquet hall of Carnarvon Castle in England, where oak floors laid about six centuries ago are still in use and in good condition. Teakwood was also used in English castles dating back into the early Middle Ages, and teak steps have been known to outwear stone, no doubt because teak contains much natural oil which minimizes the friction of constant use.

Although hardwood floors have been in existence for many centuries and have a rich historical background in early America, there seems to have been a period between early Colonial times and the end of the eighteen hundreds when hardwood flooring took a tailspin in favor of carpeting; but since the beginning of the nineteen hundreds, when more efficient production methods were ushered in, hardwood floors have again become the vogue.



Sample of red birch and bird's-eye maple parquetry flooring

Grading rules to protect the consumer and standardization to facilitate installation have been enacted. Hardwood flooring may now be bought prefabricated, pre-finished, and packaged, and can be easily installed by the home owner himself or by the novice; this merchandising angle is considered one of the great improvements in hardwood flooring in recent times. These modern economies in manufacture and merchandising methods have brought hardwood floors within the reach of the modest purse.

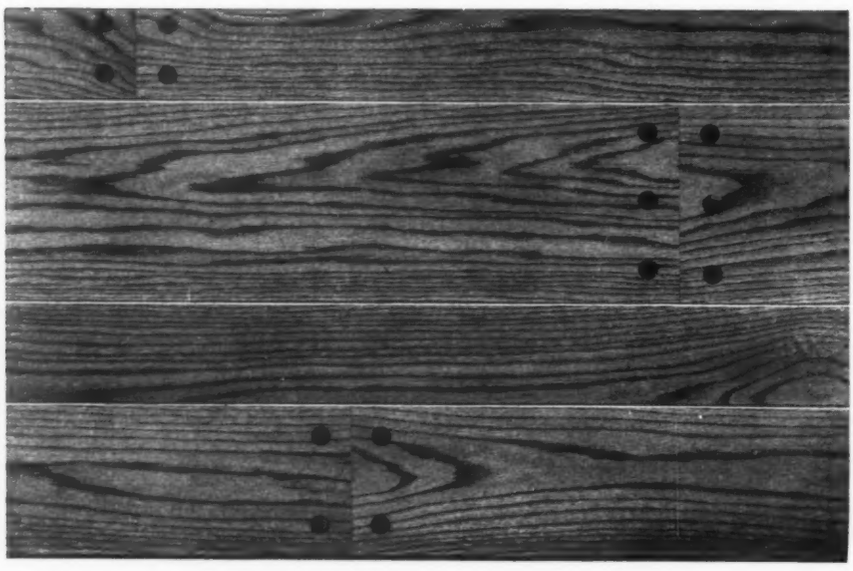
Today there are three main types of flooring—strip, plank, and block; herringbone is also used extensively for decorative purposes. Least expensive is strip flooring, in which the "strips" making the entire floor are of uniform width and with tongue and groove and end-matching to expedite installation. Block flooring is prepared by fastening trimmed short lengths into units, which may be installed in a variety of ways to provide interesting floor effects. Plank type flooring is designed to afford the appearance of ancient hand-hewn timbers with the practicality of modern flooring.

Oak and maple are the most common of the hardwoods used for flooring. Of these, oak is the most universally popular for use in the home. Maple, beech, and birch are often referred to as the "flooring sisters"; of this trio, maple is the best known and is generally specified where the floor is to be subjected to heavy traffic. Pecan, which has been produced in quantity only in recent years, is the toughest of the native hardwoods used for flooring; it has a natural beauty that is somewhat different from the other hardwoods, which suits it to household as well as to industrial, dance-hall, and gymnasium use. A beech floor for an armory in Albany, N. Y., was installed in 1938. Other native hardwoods which have occasionally been used for flooring are gum, ash, black walnut, Wisconsin cherry, and tupelo.

The National Oak Flooring Manufacturers' Association is the spokesman and for oak flooring manufacturers; headquarters are maintained in Memphis, Tenn.

The Maple Flooring Manufacturers' Association, with headquarters in Chicago, Ill., protects the interests of that branch of the industry.

And so hardwood floors speak for themselves through the centuries—their great charm and tradition, their beauty and durability, their ease of installation and maintenance, their sanitation and warmth and insulating qualities, and their character and dignity have made the record of their usefulness outstanding.



Random width plank type flooring of red oak

75 YEARS

OF FAMILY LUMBER TRADITION

Owned and managed by the third generation of a pioneer lumber family which began in the lumber business originally in Pennsylvania, later moving to Michigan and then to the Pacific Northwest, Twin Harbors Lumber Co. has an exceptional record of customer satisfaction.

With a diversified line of products, Twin Harbors is an important factor in serving the nation's war lumber needs. Twin Harbors is an organization to tie to for your post-war needs in Pacific Coast and Inland Empire Woods—Douglas Fir Lumber, Red Cedar Shingles, Douglas Fir Plywood, Ponderosa Pine Lumber and molding (all orders must conform to M-208, L-218 and L-290).

TWIN HARBORS LUMBER CO.

Executive Offices, Aberdeen, Wash.

Gen. Sales Offices, Seattle, Wash. and Portland, Ore.

Gen. Sales Offices, Pine and Inland Empire Products, Portland, Ore.

Branch Offices, Chicago, Baltimore, Philadelphia, Boston, and Waco, Tex.

Building NOW for Post-War Permanence

National Biscuit Company, Atlanta Bakery, floored with 481,000 feet of Robbins Hard Maple. Louis Wirsching, New York City, Architect.

with

ROBBINS FLOORING

Long years after the last shot in this war is fired, the Robbins Hard Maple Flooring recently laid in war plants of every description, coast to coast, will be faithfully serving peacetime production. Famous for endurance, low cost of maintenance, speeding up plant-traffic, safety and comfort under foot, Robbins Flooring is ideally suited to the heavy work of war.

Robbins Flooring helps expedite war construction, too. Floors lay faster, with Robbins nail grooves; nails don't need setting. Beveled bottom edges protect the layer's hands, prevent scuffing of building paper and further speed up the job. Robbins Flooring has a narrow-channel back with three bearing points on sub-floor or sleepers.

Wartime demand for Robbins Flooring has exceeded supply. Mill capacity has been taxed; many men, impossible to replace, are in service. Dealers and others unable to obtain Robbins Flooring because of priorities understand we are doing our best.

ROBBINS SPECIAL FLOORING:

Ironbound Continuous Strip Maple, laid direct on concrete in mastic — more sanitary, wears longer, moves traffic faster. Edge Grain or Flat Grain.

Ironbound Unit Blocks — Maple, Beech, Birch and Oak.

Robbins Jointed (Square Edge) Flooring—for easy, quick replacement in heavy-duty areas.

Robbins Treated Hard Maple Flooring — protected from termites and moisture. Special thicknesses, widths, special matchings and patterns.

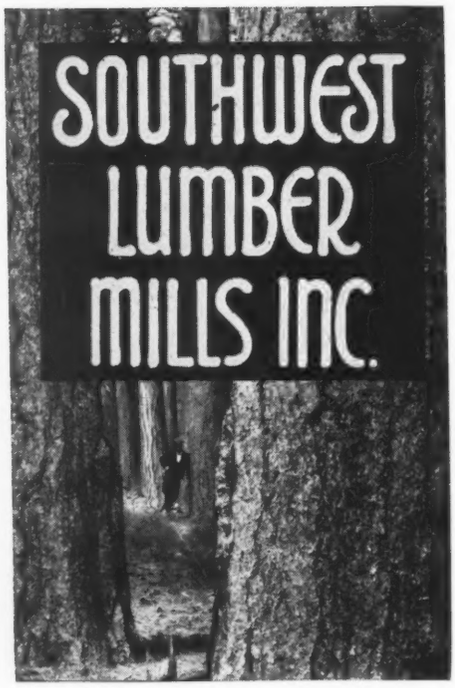
For remarkably low maintenance cost, the Tennant System (G. H. Tennant Company, Minneapolis, Minn.) is recommended.

ROBBINS FLOORING COMPANY

Rhinelander, Wisconsin

Members of the Maple Flooring Manufacturers Association

MILLIONS WALK DAILY ON ROBBINS FLOORING



PINE

for War and Postwar Needs

Two big, modern, electrically operated mills — 100,000,000 feet a year. Plentiful supply of high altitude, soft-textured Arizona Ponderosa Pine timber. A selected cutting, sustained yield operation.

Most of our present production is going for essential war needs. All orders must conform to M-208 and L-290.

Postwar buyers will find us a dependable source of supply for dimension, siding, interior trim, ceiling, casing, base, lath, selects, common, pattern specialties, cut-to-length crating, box shook, shop lumber and industrial items.

Southwest Lumber Mills, Inc.

McNary, Arizona

Mills at McNary and Flagstaff, Arizona

DISTRICT SALES OFFICES

PHOENIX, ARIZ.—R. B. HOWELL and G. R. McNARY, Representatives

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American Lumberman on Parade

(*Continued from page* 115)

going to stay a little longer. When I came out from the interview a number of the lumbermen wanted to know what we talked about. I told them that Mr. Hoover would tell them.

The AMERICAN LUMBERMAN has been greatly pleased to note within the last few years the establishment of research organizations inside of the lumber industry. It hopes and believes that these research organizations will be enlarged. It expects to see in a not very distant day a research department in each species of lumber in the industry. This is a changing world — new methods — new materials — new machines with great possibilities are in the offing. It behooves the manufacturer as well as the dealer to be looking, listening and reading of the things that will affect his business. The lumber business is one of the oldest and always will be one of the newest businesses in the world because it offers to the thinking man, the patriot, the opportunity to be of service to his fellow-man. Lumber is a basic material. God gave the trees to man—what will be the record of his stewardship. He can make a shining record if he tries. The future of the lumber business has more possibilities in it than has the record of its accomplishments been in the past.

Here are two simple suggestions that are worth the consideration of the entire industry. The World War has brought our boys to every country in the world. It has made the inhabitants of the other countries wonder and wish that they might know more about America. Other peoples in the world would like to live like Americans live. The lumber manufacturers of the U. S. should be studying the habitations of all the peoples of the world. They should find out what kind of houses the folks over in Asia want to live in—not the kind of houses we want to sell them—but the kind of homes they want. When the boys return, some of those boys will be useful in bringing back ideas of living conditions in those countries in which they have been stationed — others will become salesmen to go back to those countries to sell the natives on better living conditions. All manufacturers of lumber should study the possibility of making prefabricated houses of the kind that the inhabitants want, and we will sell them to them.

You say the inhabitants will be busted and will not have the money —sure—but Uncle Sam will guarantee their bonds—the Lend-Lease Organization will lend them houses paying you the money for them. This is just an idea that should be worked out. You and the AMERICAN LUMBERMAN can work it out.

Another idea—and it is right in the offing. Uncle Sam wants to sell more bonds—he will have to sell more bonds in order to supply the necessary materials, foods, to win the war and win the peace. There are thousands and thousands of young folks who will want to be married as soon as the war is over. Some of them got married before they got into the war. These married girls are living at home with the parents of either the husband or the wife, and perhaps there has been a baby come into that home. Many an individual wife and husband would like to have their own home — the old folks where they have been living would like to have their own home. Sell them a bond to be paid out of the earnings of the family for the specific purpose of building a home. This to be known as a war bond home — or a war home bond — it will carry with it priorities for materials and things that go into that home. When the government says we can commence building homes these war bond homes will have first call on all the materials that go into that home and to furnish it. It cannot be used for speculative purposes. It will be for the family of the soldier. That money will be saved while he is away. It will be a down payment for the citizen that will be the right kind of a citizen and one who should have priorities. If something happens to him, the soldier is killed or his family disrupted all he would have to do would be to make a statement to that effect, sworn to before a proper official and the Government would return the money. It offers a great opportunity for lumbermen everywhere, while we as citizens promote a patriotic effort to keep the lumber business ever in the front as the home builders of the land.

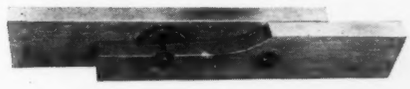
CONNECTORS IN WOOD STRUCTURES

The war, with its metals shortages, greatly accelerated the development of timber as a structural medium. Many engineers, accustomed through a lifetime to working in steel, suddenly had no steel. They had to work with wood and found that they could. They found an already developed system of timber engineering awaiting them —the *Teco* Connector System.

But the new birth of timber as a structural material did not start with the war. Timber engineering, as a continuing science, began in 1933 with the advent of the connector and the system of engineering which has been built around it.

A technical explanation of the revolution wrought by the timber connector is given by Richard G. Kimbell, Chief Engineer of the Timber Engineering Company, a subsidiary of the National Lumber Manufacturers Association, which introduced and developed the system.

"*Teco* timber connectors used in structural joints are metal devices



employed in the contact faces of lapped members to transfer load from one member to another, the joint being held together by one or more bolts. For example, a split-

ring connector is installed with one-half its depth in each contact face and transfers load approximately in proportion to the relative size of the connectors. It is this large bearing area of the connector against the wood near the surface of the timber where the intensity of the stress is greatest, as compared to the limited area under a bolt, which accounts for the high efficiency which can be developed in timber joints with connectors. With connectors in the limited joint area, it is now feasible to develop up to 100 percent of the working stresses of the timbers. Such a high percentage of load transfer with bolts or nails alone is either expensive, or impractical."

More briefly stated, the timber connector spreads the load on a timber joint over practically the entire cross-section of the wood and thus brings the full structural strength of the lumber into play.

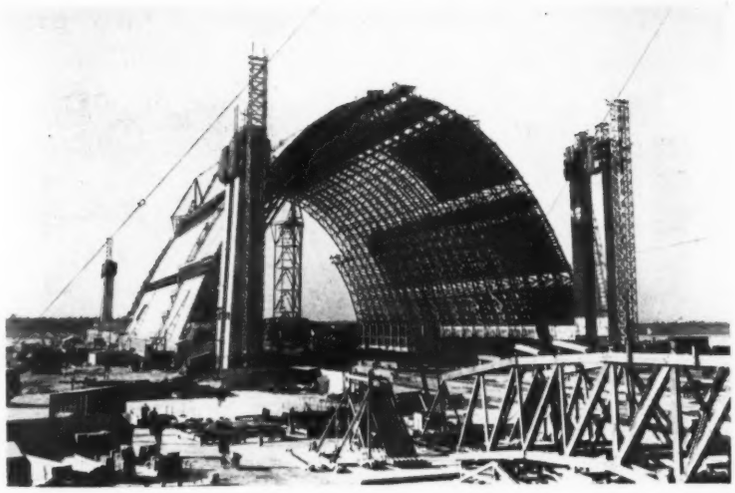
The connector is as simple as the lever, the wheel, the gear, and other landmarks in mechanical progress and its principle may be as easily stated. It is an implement for stress dispersal — especially and ideally adapted to timber.

Starting with the split ring as the most versatile type of the group, timber connectors include toothed rings, claw plates, shear plates, and grids, one or another of which types is suitable for joining wood to itself or to any other structural material.

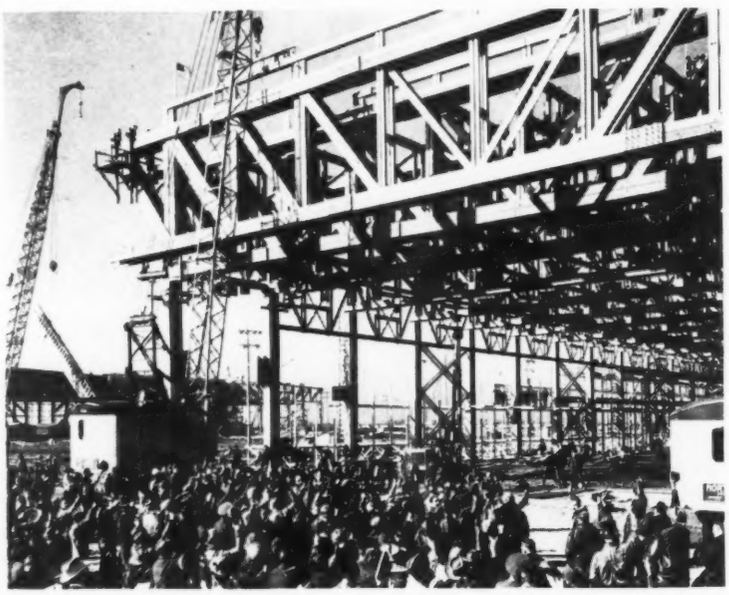
Fourteen American factories now are engaged in manufacturing *Teco* connectors and the special tools with which they are installed.

The Timber Engineering Company, from whose initials the *Teco* connector takes its name, expended over $300,000 in research and design in developing the device to its present efficiency as an engineering implement. Included, of course, was the necessity of creating efficient portable and non-portable high-speed tools for precision grooving of the timber preparatory to installation of the connectors.

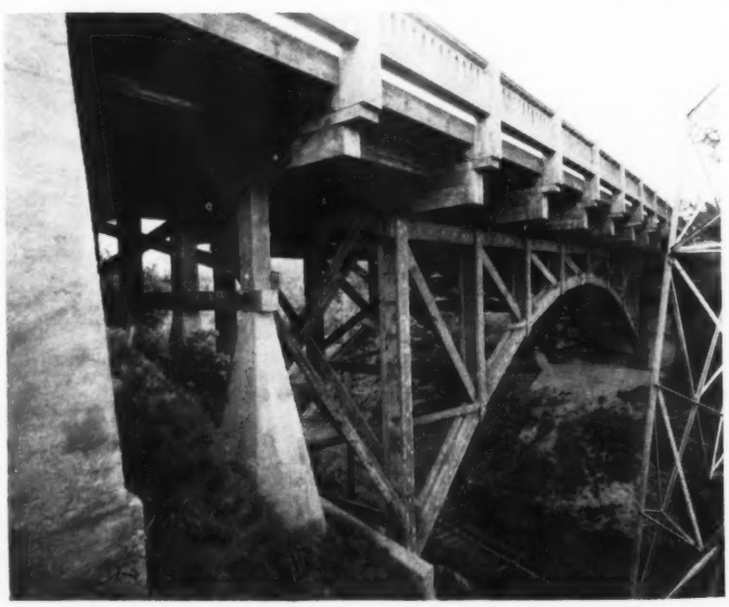
The original, fundamental research on the application of the connectors to American woods was conducted by the Forest Products Laboratory of the U. S. Forest Service, where most of today's science in the use of American wood has had its birth and where thousands of tests on timber connector joints were made. The National Committee on Wood Utilization introduced to America the European practices of timber construction.



The world's greatest timber structure, to house Navy blimps, is built with Teco system. The height is 153 feet, the clear span is 237 feet and the length is 1,000 feet.

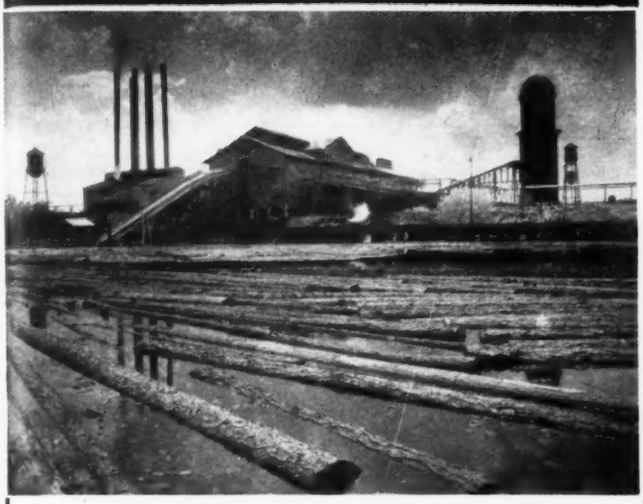


Flag being unfurled atop final truss in the erection of the world's largest timber factory building, built for the Douglas Aircraft Company, Inc.



Bridge of timber in Multnomah County, Portland, Oregon.

TREMONT



Our Pine Mill at Rochelle, La.

QUALITY for 38 YEARS

The name, Tremont, has long stood for dependability in Southern Pine, Southern Hardwoods, Oak, Beech and Pecan Flooring.

For years our organization has specialized in service to the retail lumber dealer trade. Tremont mixed cars have offered an unusually attractive assortment.

While our customary service to lumber dealers has been interrupted by war restrictions, we are looking forward to the day when we can again build up an assortment and resume our pleasant dealer relationships.

Southern Pine
Southern Hardwoods

Oak
Beech
Pecan
Flooring

TREMONT LUMBER COMPANY
HERBERT MOSS,
General Sales Manager
Rochelle, La.

The story of
THE BOMBER THAT WOULDN'T BURN

Several weeks ago fire prevention officers of a bomber base came to us for help. A demonstration of fire extinguishment methods for aircraft crash fires was to be staged on a full scale model of a B-17 Flying Fortress — wooden framework covered with doped airplane fabric. Their problem was to find some means of retarding the destruction of the bomber by fire sufficiently to permit the demonstration of various extinguishment techniques. 50 gallons of crank case oil were to be smeared on all leading edges, 150 gallons of high octane gasoline were to be placed in wing and fuselage tanks and 180 gallons sprayed over the model before setting it afire.

On our advice the wooden framework of the bomber was protected with 2 coats of Firepel "S".

When the gasoline and oil were ignited, the fire was so intense that the firemen needed the protection of water curtains—yet in 14 minutes the fire was out. The wooden framework of the bomber was still standing, and official motion pictures show the unsuccessful efforts of the fire party to shake the framework down.

ALBI—firepel "S"
REG. U. S. PAT. OFF.

TESTED AND APPROVED BY
Underwriters' Laboratories Inc.
FOR PROTECTION
AGAINST FIRE HAZARD

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ALBI *Firepel Corporation*
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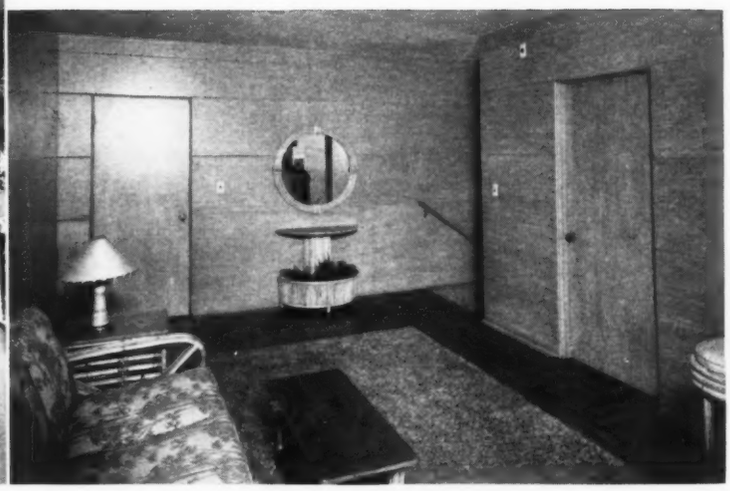
Looking

Easy to handle. That describes the application of fir plywood sheets in building houses or other structures with plywood. Here carpenters are bending plywood sheathing around a bay in a large new home.



Douglas fir plywood in a light stain finish is used to provide the modern interior of this upstairs landing area that serves as a reading section of an immense living room. Panels are narrower near ceiling than near bottom of the wall. Flooring is oak parquet over plywood subfloor.

THE MOST dramatic chapter in the 38-year history of Douglas fir plywood is being written today as it serves the nation both on the battle fronts and behind the lines.

The Army, Navy, Maritime Commission and war industries constantly are employing the big, rigid panels to do countless new jobs for them. And the performance of fir plywood in these roles has attracted widespread attention among the military and civilian population.

Disaster at Pearl Harbor a year and a half ago bruskly ushered in the current applications for plywood, (actually, military leaders had long before begun utilizing the panels) and rather abruptly the war brought suspension of the four-year plywood development (1938-1941) as a building material. It had been gaining increasing acceptance by architects, builders, lumber dealers and home owners.

These specifiers had written plywood into the designs for homes of all sizes and types—both for inside and outside walls—office buildings, factories, service stations, prefabricated structures and even into the forms for concrete buildings, bridges and reservoirs. Demands for these applications, plus those for industrial uses, had primed the industry to increase its production capacity threefold during these years. So fir plywood is a peacetime material drafted for the duration; when peace returns, the industry expects to resume its dominant role in the construction field.

Douglas fir plywood is made from the giant Douglas firs of the western slope of the Cascade Mountains. As these trees grow in commercial stands only in Washington and Oregon (excepting British Columbia) the 29 factories are located in these two states. Standardization and mass production of product always has differentiated this industry from the manufacturers of other plywoods (principally the hardwoods). Fir plywood, manufactured in large, flat sheets of standard sizes and grades, accounts for the greatest bulk of all plywood production, and in 1942 the producers of Douglas fir plywood shipped 1,800,000,000 square feet of the panels. It is a low-cost building commodity rather than a specialty.

While plywood may be news today, widespread recognition has been long in accumulating. The first Douglas fir plywood panels, manufactured expressly for display at the Portland, Ore., Lewis and Clark Exposition in 1905, attracted little attention in the press and not great enthusiasm from the visitors.

But those dozen panels represented the birth of the Douglas fir plywood industry, today valued at 72 million dollars and employing 10,000 men and women. Portland Manufacturing Co., located at St. Johns, now a part of Portland, was built in 1898 as a basket factory. The business consisted of baskets, egg cases and veneer for furniture use. A man by the name of Carlson operated the plant from its inception until the fall of 1906, during which time the first plywood (plywood being made of odd number of veneers or plies bonded together with the grain of each ply at right angles to the one above and below) was produced.

Late in 1905 or in January of the following year, Peter Autzen became president of the company at St. Johns. Autzen previously had an interest in Mack Logging Co. of Hoquiam, Wash., which he disposed of after moving to St. Johns.

Development

At first the manufacture of Douglas fir plywood was carried on in a crude manner. The presses, with jack screws to supply pres-

at Plywood

This home is made of shop-formed sections of plywood walls with the panels glued to both sides of light framework. Interior of the home is planned for maximum utility and comfort. This house and hundreds of others were prefabricated and erected long before the war housing problem arose.

Hulls of these boats usually are of plank construction, but cabins, decks, bulkheads and other parts are cut from flat sheets of Exterior, or marine type, plywood. This 80-foot Elco PT boat was turned out at the yards of Electric Boat Co., Bayonne, N. J.

sure, were made from timber. Animal glue was applied to the veneers with a hand brush as the first mechanical glue spreader was not installed until 1906. Similarly, drying at first was accomplished merely by air drying supplemented by use of an ordinary lumber kiln with home-made veneer racks. About 1912 the St. Johns plant installed a veneer drier. It was a Proctor, two-line about 10-feet wide and 82-feet long. This drier still is in operation at Klamath Falls, Ore., and the lathe on which veneer for the original plywood was cut still is in use at Coast Veneer Co. at Portland, Ore.

The panels were manufactured in two grades: "two sides" and "one side". The "two sides" panels, which described the quality with two clear faces, were sold to door factories, and this use of plywood constituted its primary application for many years. "One side" panels had a clear face with a back (opposite face) having certain imperfections. These sheets were sold primarily as stock for drawer bottoms. Out of this latter grade has grown the "Plywall" or wallboard grade of plywood which now is widely used for interior finishes of homes and buildings.

The most common form of cost reduced Douglas fir plywood until about 1911 was of three-ply panels in thickness of 3/8-inch and half inch. A price list issued by Portland Manufacturing Co. about 1913 listed the following prices based on panels of 3/7-inch rough (which would be 3/8-inch sanded); panels 40 to 48 inches wide and 48 to 84 inches long, 22 cents a square foot if good one side and 26 cents a foot if good two sides. Larger panels were more expensive. An interesting contrast in cost is offered when it is realized that current maximum prices as set by OPA for panels quite similar are about 5 or 6 cents a square foot.

Until 1920 plywood manufacture was always thought of as one operation of a door factory or of a plant making boxes and crates. In that year the first plywood mill, separate and apart from any other enterprise was built at Seattle by Elliott Bay Mill Co. Craig L. Spencer headed the firm and is still its active president.

Greatest single production development in the past ten years is the hot-plate press, which together with the advent of waterproof synthetic adhesives, made possible the manufacture of exterior or waterproof type fir plywood. Harbor Plywood Corporation produced the first Exterior fir plywood in 1935 from a press built by their engineers and utilizing a phenolic resin adhesive formulated by their chemists. Shortly thereafter M & M Wood Working Co. started manufacture of this type of panel; now, more than half of the 29 factories in the industry are producing this outdoor type plywood. In 1942 there were nearly 300,000,000 square feet of Exterior plywood produced or nearly three times as much as the previous year.

This development was dependent not only upon the use of a machine that will apply both heat and pressure at the same time to set the adhesive in a few minutes, but also upon the formulation of an adhesive that, when set, forms a permanent bond impervious to water, weather and other conditions. The waterproof phenolic formaldehyde adhesives became commercially available shortly before introduced to the fir plywood industry in 1935.

The other great single advancement in adhesives for plywood manufacture came back in 1927 when soybean glues (which are moisture resistant) replaced the blood glues previously used. I. F. Laucks of the Seattle glue and paint company

At Portland, Oregon's Lewis and Clark Exposition in 1905,

An American Flag Made of Excelsior Received More Attention Than the First Douglas Fir Plywood!

But from a novelty, this engineered lumber has developed into one of the nation's busiest construction materials. Production in 1942 exceeded 1,800,000,000 sq. ft.

THE FORESTRY BUILDING, constructed of huge logs from the virgin forests close to Portland, Oregon, was one of the chief attractions of the Lewis and Clark Exposition. The only Fair structure still standing, it is visited by hundreds every year. The photograph above shows how it looked in 1905.

●

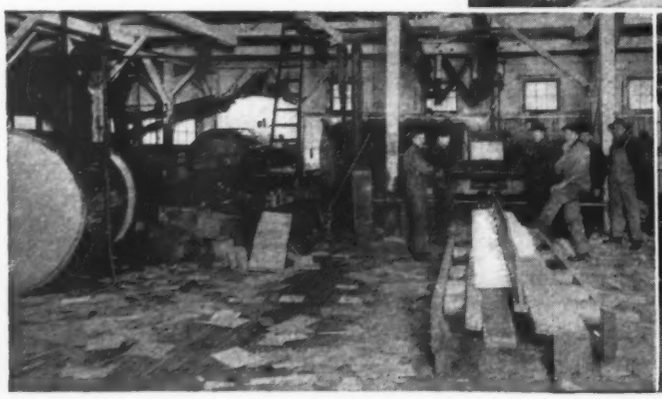
FIRST PANEL *(right)* Here's one of the original Douglas Fir Plywood panels Portland Manufacturing Co. made in 1905 for display at the Lewis and Clark Exposition. The Company's entire veneer exhibit is still in the Forestry Building and may be seen there any day. Although these first panels were made for exhibition purposes only, Portland Manufacturing Company made them up regularly for door panels after the Fair. Production in the rebuilt plant in 1910 was 1000 square feet of ½-inch plywood per 8-hour shift.

● Newspaper and magazine reports of the Portland Manufacturing Company's exhibit at the Lewis and Clark Exposition in 1905 listed veneers, coffee and spice drums and baskets—and gave special mention to a unique American flag made of excelsior.

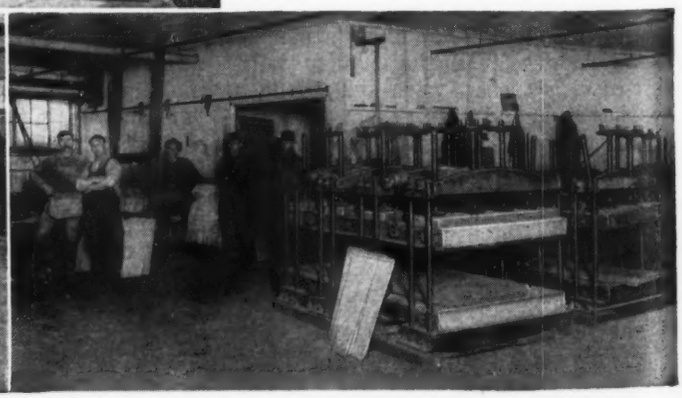
Little or nothing seems to have been said of a dozen 3-ply panels of fir veneer. And it is doubtful if many of the people attending the Fair gave them much thought or attention either. *Yet they were the first panels of Douglas Fir Plywood ever made. And they marked the beginning of a seventy-two million dollar industry that now contains 29 plants and employs more than 10,000 men and women.*

DOOR PANELS INITIAL USE

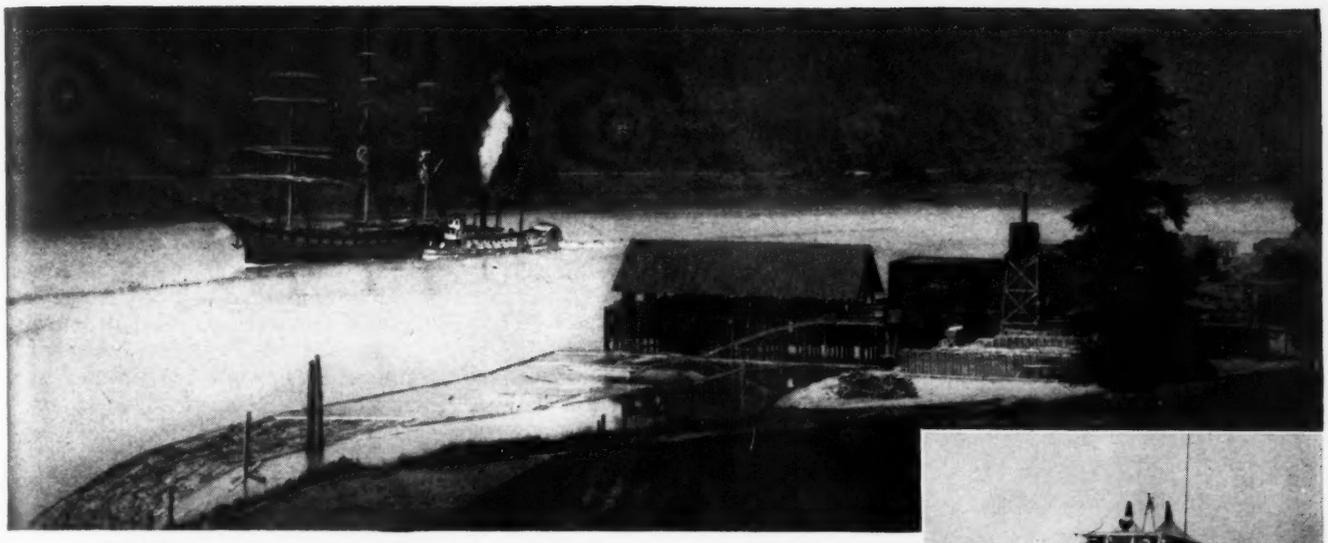
Portland Manufacturing Company began the regular fabrication of Douglas Fir Plywood after the fair for use as door panels. At first, animal glue was spread by hand with a brush, but in 1906 a small mechanical glue spreader was purchased. Homemade timber presses using jack screws were employed until 1907 when sectional steel hand presses were installed. This plant was destroyed by fire on February 14, 1910, but was rebuilt, resuming operations on September 1. Its capacity was 1000 square feet of ½-inch plywood per 8-hour shift.



INTERIOR of Portland Manufacturing Co. plant as it was rebuilt after the fire in 1910. Logs used were of such high quality that virtually all plywood made was Good 2 Sides. This plant also cut veneer for baskets and furniture.



LARGEST PANELS that could be made on these Francis Hand Sectional Presses were 48″x84″. Twenty-five panels per pack was press capacity. Oscar Mason *(center)* was plant superintendent then, is an Association inspector now.



DOUGLAS FIR PLYWOOD'S BIRTHPLACE: Portland Manufacturing Co. as it looked in 1907.

Several other mills were built in Washington and Oregon at this time in connection with door factories. However, after World War I, the demand for Douglas Fir Plywood increased greatly for millwork and cabinet uses in addition to doors. Soon the automobile industry began to take considerable volume for frames, floor boards and similar parts. Douglas Fir Plywood was established so well by this time that new mills were built independent of door plants.

PRODUCTION INCREASED RAPIDLY

In 1925—on a 3/8-inch 3-ply basis—the industry produced 153,000,000 square feet. By the end of 1930, production was almost double the 1925 figure: 305,000,000 square feet. In 1939, production reached 1,000,000,000 square feet. In 1942, it was over 1,800,000,000 square feet.

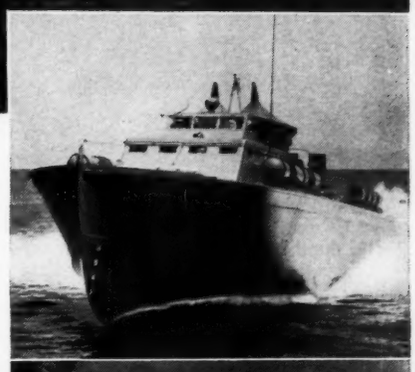
Protein glues replaced animal glues about 1927, and constant improvements have been and are still being made in them. The use of phenolic resin binders and hot-plate presses to make Exterior-type Douglas Fir Plywood began in 1934. In 1942, 16% of the production was Exterior-type.

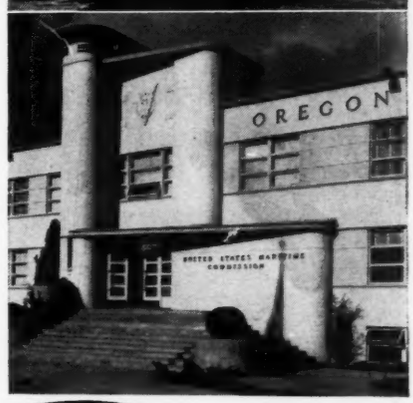
In 1933, the first U. S. Commercial Standard for Douglas Fir Plywood was promulgated, setting up industry standards for manufacture and grades. This Commercial Standard has been revised several times since then. Today all Douglas Fir Plywood manufacturers conform rigidly to U.S. Commercial Standard CS45-42. Buyers everywhere recognize Douglas Fir Plywood as a uniform, quality product clearly "grade trade-marked" for easy, positive identification and specification.

PLYWOOD HAS GONE TO WAR

The Douglas Fir Plywood Industry is now devoting its entire capacity to war production. This Miracle Wood is playing an important part in the construction of military and war worker housing, factories and farm structures. It's serving in ships and boats, planes, railroad cars, busses and other transportation equipment. It's being used for chests, crates and hundreds of other purposes. This experience—together with the results of the Association's continuing research program—will enable versatile Douglas Fir Plywood to serve you far better after Victory than ever before.

For a photographic review of Douglas Fir Plywood's war jobs, send for free War Use Folder. Douglas Fir Plywood Association, Tacoma Bldg., Tacoma, Washington.





IMPORTANT WAR USES include boats and war housing. A plywood torpedo boat like the one shown above requires as much as 3000 square feet of Douglas Fir Plywood for decks, cabins, bulkheads and other parts.

Millions of feet of plywood have gone into cantonments, barracks, factory and administration buildings, and homes for war workers. A tremendous volume of plywood is also being used in prefabricated structures.

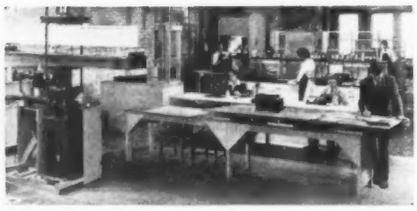
TO HELP SPEED VICTORY the Douglas Fir Plywood Industry is devoting its entire capacity to war production. We know this program has your approval.

THE DOUGLAS FIR PLYWOOD INDUSTRY is only 38 years old. Yet in that time it has grown from one small mill to 29 huge plants containing the most modern mass-production equipment. The mill shown here, typical of those built in the past 5 years, has an annual capacity of 120,000,000 square feet.

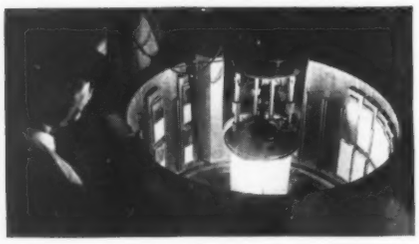
DOUGLAS FIR PLYWOOD

Real Lumber

MADE LARGER, LIGHTER
SPLIT-PROOF
STRONGER



General view of part of the Tacoma, Wash., research laboratory of Douglas Fir Plywood Association maintained by the plywood manufacturers.



Weather-maker. Just a month in the laboratory weatherometer, which forms synthetic weather conditions 12 times as severe as ever encountered, produces the effect of a year of sun and rain on finishes for plywood. A violet-ray arc lamp provides intensified sunlight.

Tiny samples of Douglas fir plywood are boiled for four hours, dried, then subjected to another boiling. While wet, the samples are destroyed in a shear-testing machine; the wood itself fails while the glue-line or bond remains firm.

In ovens with the temperature at 145 degrees, between boilings, the fir plywood samples are dried for 20 hours to a minimum moisture content. The wet-dry torture process determines that the glue-line in Exterior (waterproof) type panels is stronger than the wood itself.

which bears his name is recognized as the founder of the soybean glue industry. For the past 15 years the fir plywood makers have relied on soybean glues primarily for the production of the moisture-resistant or interior type panels. A third type of glue, that made from casein, is used by this industry to form a special grade of plywood that is highly moisture-resistant but not waterproof.

One other factor that distinguishes the fir plywood manufacturers from other plywood makers is that in the fir industry always the adhesive is applied in liquid form by rollers. In the production of other types of plywood often glue that is supplied in thin sheets is used. However, with one or two short-term exceptions, sheet adhesives have not been used by plywood men in the Pacific Northwest.

Industry Growth

Probably a listing of the yearly production of the plywood industry from 1925 to 1942 indicates about as clearly as any other method the physical growth during that period. Here is a listing of the output in square feet based on panels of ⅜-inch thickness:

1925	153,262,608
1926	172,966,900
1927	206,209,980
1928	275,711,204
1929	358,424,918
1930	305,000,000
1931	235,900,042
1932	200,708,354
1933	390,430,455
1934	383,769,324
1935	490,855,083
1936	700,000,000
1937	725,000,000
1938	650,000,000
1939	950,000,000
1940	1,200,000,000
1941	1,650,000,000
1942	1,800,000,000

Of course, there are aspects other than production that characterize the development of the industry. For the making of fir plywood today is a highly specialized undertaking with each of the mills, representing an average investment of well over a million dollars, geared to machine production of a high quality, uniform product. Plywood is an engineered product that capitalizes on the natural advantages of wood, and the skills and machines of America's mass-production technique are incorporated to produce panels of ever increasing quality.

Today, with the careful selection and re-selection of every piece of fir veneer so it will be used to best advantage, and with the utilization of machines for repairing defects and joining together narrow veneers, the recovery ratio in plywood manufacture is about 2.3 to 1. That is, from a log scaled to bring a given board footage of lumber there will be about 2.3 times that many square feet of plywood recovered.

Research Activities

The plywood industry has distinguished itself for its research activities. The Douglas Fir Plywood Assn. maintains a staff of inspectors to circulate among the various plants to review the manufacturing processes, cooperate with the mill inspection departments and collect random samples of plywood for testing at the industry laboratory at Tacoma, Wash. These samples then are tested to destruction in the association laboratory to determine the effectiveness of adhesives under varying conditions. Glue-line tests on approximately 150,000 specimens were made in this laboratory last year with particular emphasis attached to tests of the exterior type panels.

Giant "hot presses" for setting adhesives under both heat and pressure. The resultant glue line is stronger than the wood itself. Plywood panels, fresh from the glue spreader, are inserted between the accordion-like plates. Pressure of 185 pounds to the square inch and a temperature of 230 degrees set the adhesives in four or five minutes to form a bond akin to bakelite.

It is the purpose of these laboratory studies to assure the ultimate user of Douglas fir plywood that the

A letter to America's Lumber Dealers...

UNITED STATES PLYWOOD CORPORATION

EXECUTIVE OFFICES
616 W. 46TH STREET · NEW YORK

CABLE ADDRESS: "PLYWOOD" ABC CODE 5TH EDITION

TO THE LUMBER DEALERS OF AMERICA:

These are trying times for America's lumber dealers.

Shortages of stock, manpower problems, and government regulation have contributed to the difficulties which confront practically every lumber dealer. Yet a long-range view is essential if the proper place of the lumber dealer and the lumber industry generally is to be evaluated.

Of prime importance is the fact that through the marriage of plastics and wood, forest products have won new esteem in the minds of industry and the public. Due to their prominent part in the war effort, and their many newly-discovered uses, lumber and forest products are assured a permanently more important place in our daily lives.

We have seen many examples of this in the activities of our company. Our large staff of chemists, engineers and wood technologists have developed many important products for the armed forces; they are at all times keeping in mind the peacetime application of those products. These include the combination of wood with plastics and the combination of wood with metals. Some of them lend themselves to prefabrication in the housing field; others have application in fields which, up to now, have offered no opportunity to the lumber industry.

The markets which will thus be opened to the lumber dealer are almost beyond imagination.

Substantial increases have been made in the production facilities of our plants which will result not only in greater production of our standard plywood products but also in improved quality. Our postwar plans include an educational advertising campaign which will acquaint the public with our trade-marked and patented lines and will be a powerful aid to the lumber dealer in distributing our merchandise

Difficult as is the present plight of the lumber dealer, the future is bright -- extraordinarily bright. Let us all carry on as best we can during these difficult war days -- let us do everything possible to speed the victory which we are determined shall be ours -- so that we may look forward to the postwar years with well-founded optimism.

Very truly yours,

Lawrence Ottinger,
President

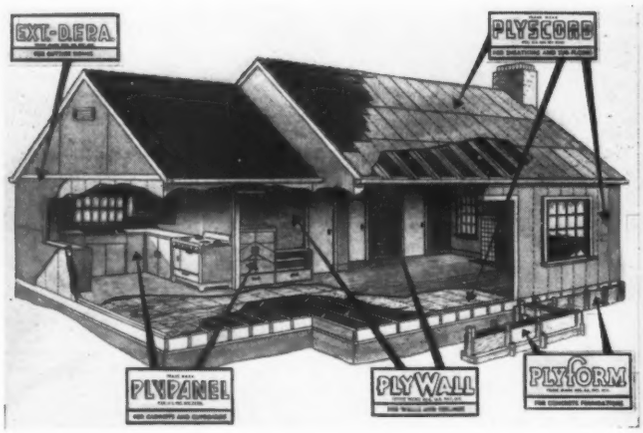
WELDWOOD

UNITED STATES PLYWOOD CORPORATION

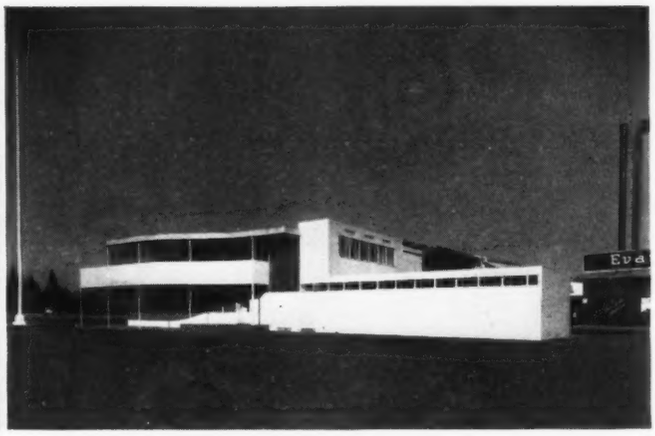
Executive Offices: 616 West 46th Street, New York

Mills at Algoma, Wis.; Lakeport, N. H.; New Rochelle, N. Y.; Orangeburg, S. C.; Seattle, Washington

Distributing Units at: Boston, Mass.; Brooklyn, N. Y.; Chicago, Ill.; Cincinnati, Ohio; Cleveland, Ohio; Detroit, Mich.; High Point, N. C. Los Angeles, Cal.; Newark, N. J.; New York, N. Y.; Philadelphia, Pa.; Rochester, N. Y.; San Francisco, Cal.; Seattle, Washington



This artist's cut-away shows the grades of plywood used to form the walls, roof sheathing and subflooring of a modern "dri-bilt with plywood" home.



Horizontal lines attained by alternate masses of plywood and glass dominate the theme of this smart office building designed by Richard J. Neutra, architect, for Evans Products Co., a plywood firm at Lebanon, Ore.

panels are of uniform quality and meet the rigid requirements set forth in U. S. Department of Commerce Commercial Standard CS45-42 applying to the material. The first commercial standard for fir plywood was established in 1932; since then four revisions have been effected with the current standard established November 16, 1942.

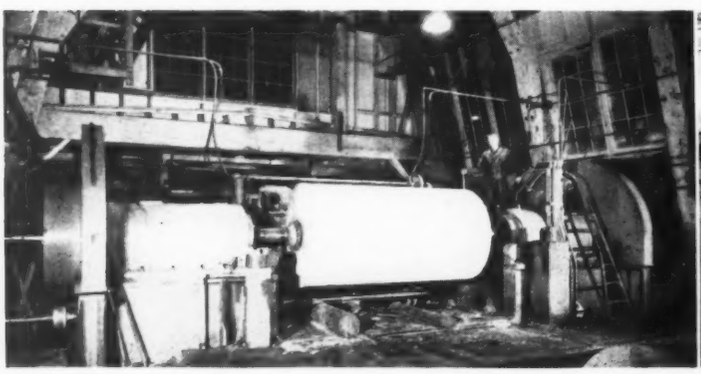
The standard not only sets forth the grades and types of fir plywood that are manufactured and marketed but also lists the testing procedure to be followed to determine that each panel conforms completely to its grade. In the moisture-resistant type there are four grades: Plywall for interior walls. Plypanel for cabinets and fine finishing. Plyscord for sheathing. Plyform for concrete forms. The Exterior or waterproof type also is produced in several appearance grades.

To augment the laboratory testing the plywood association has established the most elaborate system of glue-line exposure fences in the nation. Three of these fences are located in climatically different parts of the nation.

Research projects undertaken at the industry laboratory not only are intended to answer today's questions, posed as new responsibilities are heaped on the fir panels, but also they look to future applications. In recent months much research has been geared to immediate needs of our armed services. An example is the series of experiments recorded to answer the question of the U. S. Army Engineers as to the resistance of adhesives in exterior type plywood to oil, gasoline and salt water. The laboratory staff developed tests for adhesives and resin sealers used for a special grade of plywood introduced to meet specific war needs and manufactured only for the Army and Navy.

Other studies are directed at new and improved finishes for plywood and at determining the potentialities of plywood faced with various other materials to perform specific tasks. Recent projects developed data on nail holding qualities of the panels, and pilot tests have been made on structural characteristics of built-up box girders and I-beams. Designs for shipping cases have been tested.

Outside its own laboratory the plywood industry today is cooperating with agricultural colleges in more than 100 different projects



Giant lathes like this one are used to peel the veneer from the knot-free Douglas fir logs used in the making of fir plywood. The block is rotated against a keen-cutting blade (at back) which "shaves" off the ribbon of wood usually from a tenth to a seventh of an inch thick.

Carefully controlled gluing is important in the making of plywood. The veneer sheets are fed through giant rollers similar to those used for inking newspaper presses. With glue applied evenly between the plies, each sheet of veneer is placed with the grain at right angles to that of plies above and below.

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★ **Largest warehouse stocks under one roof.**

★ **Shipment same day order received—truckload or carload.**

★ **Aetna's engineering department can help you solve the many problems coming up with the constantly expanding uses of plywood.**

OUR STOCKS STILL INCLUDE . . .

A wide selection of sizes and thicknesses in Fir, Pine, Gum, Walnut, Oak, Birch, Maple, Mahogany and many other hardwood plywoods . . . veneers in a variety of woods . . . waterproof and aircraft plywood . . . flush doors . . . inlaid wood pictures.

All Plywood, with the exception of some Fancy and Figured Hardwoods, now available only on orders with Priority Ratings.

War requirements come first for the duration . . . When priorities end with Victory—Aetna's complete facilities will again be yours to command.

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ORIGINAL

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For 46 years the A. DeWeese Lumber Company has been serving the lumber trade. On war work now, as soon as peace comes, we will again specialize in Mixed Cars of high-grade Dimension, Boards, Shed Stock, Finish, and quick shipments of top-quality lumber.

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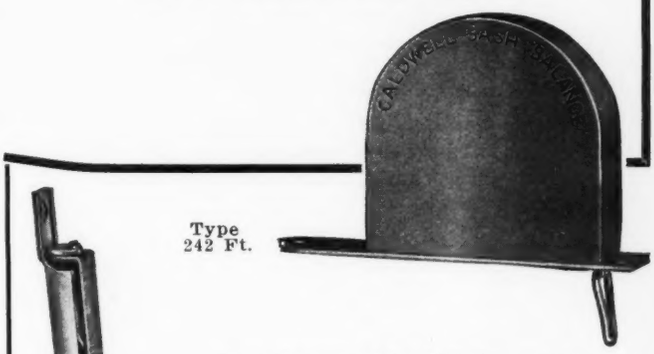

Type 242 Ft.

Vertical Balance

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The Caldwell 242FT Sash Balance is especially designed for manufacturers of Pre-fit "Stream-line" Unit Windows. A strong, compact, and easy to install balance, most efficient in operation.

The Caldwell Vertical Sash Balance is the answer to the demand for a reliable concealed balance. It eliminates most of the winding and adjusting at the job; is concealed in the sash; lasts longer and operates quietly; saves time and adjustment in installation; and requires no special tools.

Both of these modern Sash Balances have extra heavy metal construction, and the usual outstanding Caldwell features of finest materials and longest durability.

The ease of installation of Caldwell Sash Balances saves many man-hours on the job, and their satisfactory operation is guaranteed for the life of the building.

For further details and illustrated literature describing these Sash Balances, write

THE CALDWELL MANUFACTURING CO.
60 Industrial Street Rochester, N. Y.

developing new designs for various farm structures. A thoroughly modern farm home that can be erected after the war for $1,000 has been designed and built by students at two Texas colleges as a study sponsored by the plywood industry. Plywood for years has been one material contributing to most systems of prefabricated house construction, and studies continue in this field by the plywood industry and by cooperating governmental agencies.

Marketing

In addition to the various private concerns which entered the plywood field from time to time a group of 125 workmen formed a cooperative in January, 1921 that later became of considerable importance in the plywood industry and has been referred to as "the cradle of the fir plywood business."

These men formed Olympia Veneer Co., Inc., of Olympia, Wash., with each man a shareholder and co-worker. E. E. Westman, now president of Washington Veneer Co., of Olympia, was active in organizing the co-operative, became its first secretary-treasurer and later its president. J. G. Lucas was first president of the organization, and William C. Bailey, now vice president of United States Plywood Corp. at Seattle, was the first hired superintendent of the plant.

The co-op has prospered and now owns two additional factories, Eugene Plywood Co., at Eugene, Ore., and Pacific Plywood Corp. at Willamina, Ore. In addition, the co-operative has established a sales division known as Associated Plywood Mills with Olympia offices. Now there are about 1,200 employees, perhaps 50 of whom are of the original shareholders. Many of the group who founded Olympia Veneer Co. subsequently assumed managerial or supervisory positions in other factories.

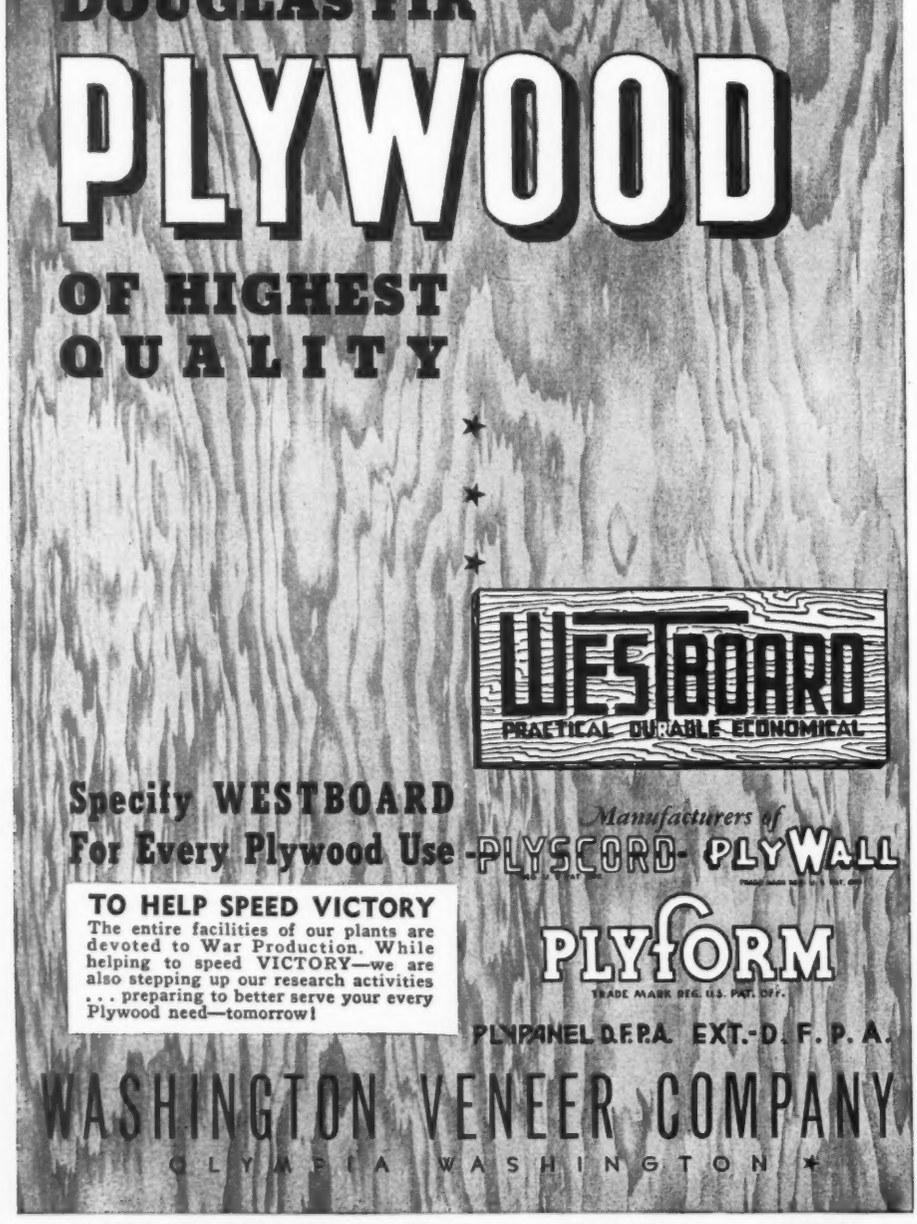
Three other co-operative plants were started in recent years. They are: Anacortes Veneer, Inc., at Anacortes, Wash.; Peninsula Plywood Corp. at Port Angeles, Wash.; and Puget Sound Plywood, Inc., of Tacoma.

Various manufacturers have their various sales plans, but the fundamental system of selling the material is through wholesale distributors to lumber dealers. As plywood at first was produced by door manufacturers, it was sold primarily through sash and door distributors. These distributors, differing from lumber wholesalers in that they maintain warehouse stocks, ordered stocks of plywood with their doors. Lumber dealers looked to these distributors for less than carload supplies of plywood. In the thirties panel jobbers entered the field handling primarily plywood. A survey in 1938 showed that by then virtually every lumber dealer in the nation sold at least some grades of fir plywood.

To serve the export market, Pacific Forest Industries was formed in 1935 as a co-operative enterprise engaged solely in the sale for export of the products of the member plywood factories. Axel H. Oxholm was appointed managing director. There had been previous export sales agencies.

Since 1928 the plywood makers have maintained an association almost continuously to promote the use of their product although the sale has remained directly the activity of manufacturers. The Douglas Fir Plywood Assn., W. E. Difford, managing director, was formed in 1933 and is today carrying on the research activities previously mentioned and promotion work for the industry.

The past six years has seen the greatest development in the industry for during these years its peace-


DOUGLAS FIR
PLYWOOD
OF HIGHEST QUALITY
WESTBOARD
PRACTICAL DURABLE ECONOMICAL
Specify WESTBOARD For Every Plywood Use
Manufacturers of
PLYSCORD
PLYWALL
TO HELP SPEED VICTORY
The entire facilities of our plants are devoted to War Production. While helping to speed VICTORY—we are also stepping up our research activities . . . preparing to better serve your every Plywood need—tomorrow!
PLYFORM
TRADE MARK REG. U.S. PAT. OFF.
PLYPANEL D.F.P.A. EXT.-D. F. P. A.
WASHINGTON VENEER COMPANY
OLYMPIA WASHINGTON
FACTORY REPRESENTATIVES: BOSTON - BROOKLYN - CHICAGO
FORT WORTH - KANSAS CITY - LOS ANGELES - MINNEAPOLIS - TALLAHASSEE

The Tennessee Valley Authority developed the trailer house as an expedient for housing some of its workers on projects essential to war production. Each factory-fabricated trailer house consists of two sections, each section about the size of a large commercial trailer. The sections are transported to the erection site on hauling trailers towed by light trucks. An essential feature of the trailer house is that its two sections are complete including finished painting, plumbing, and electrical work and specified furnishings. The two sections merely are assembled and bolted together to form the house. So successful were the models tested that TVA recently ordered 100 additional trailer houses from Schult Trailers, Inc., of Elkhart, Indiana. In the factory the two sections are fabricated of plywood, finished, furnished and shipped to the erection site.

time and war-time uses have received their due recognition as at no other time in history.

Plywood for many uses to which it is especially suited is made from pine. Pine plywood takes enamel well without grain raising and therefore is used considerably for economical kitchen cupboard units, and other items which are finished with enamel or gloss paint. Pine plywood is used as core stock to which fine hardwood veneers as thin as 1/64 of an inch are applied; also because of pine's freedom from grain raising, which if present would show through the superthin top layer.

HARDWOOD PLYWOOD

SINCE TIME immemorial fine figured hardwoods have made a special appeal in the homes of mankind. In the times of the early Egyptians, the use of the plywood principle was a secret known to only a few of the finest craftsmen as a method of obtaining the utmost beauty from rare and exotic woods. For many years past hardwood plywood has been the mainstay of the cabinet making and furniture industries. During the 1930's its use extended to the building material field, providing interior walls which combine the rare beauty of figured hardwoods with structural strength and a permanent dependability at a fraction of the cost necessary under former manufacturing methods.

Hardwood plywoods, too, are having a large part in the present war effort. They have been turning in sensational performances in airplanes, ships, radar equipment and many other military products, some of which are still kept secret. Plywoods, plastics and light metals, and combinations of the three are among the new developments that are most likely to make a mark in the post war world.

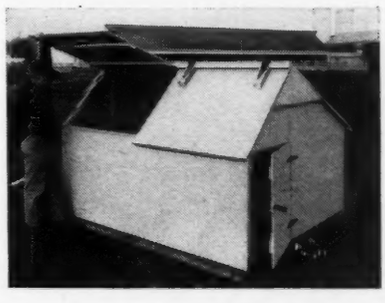
For a number of years considerable scientific ingenuity has been devoted to the development of substitutes for lumber and lumber products; but the development of plywood and plastics independently and as related to each other, plus research in the chemistry of wood, have caused a complete reversal of scientific thinking.

The search for substitutes for wood was spurred by certain features of wood in its natural state which new plywood products and other developments in the industry have practically eliminated. Through the use of the new techniques tremendous new markets for lumber products will be developed.

The production of plywood from the fine hardwoods is a considerably more intricate process than that required for the production of softwood plywoods. Hardwood plywood can be made to meet highly exacting specifications for special technical, industrial or architectural requirements. During the war, aircraft plywood has been a vital factor, such plywood being made largely of birch, mahogany, or gum, with poplar or basswood centers and crossbanding, and requiring the veneers to be jointed on tapeless splicers. Some of this plywood is made as thin as 1/32 inch 3 ply, each veneer ply being approximately 1/100 inch thick. Throughout the process of manufacture, from the cutting of the hardwood log into extra thin veneer until the plywood sheet is ready for shipment, temperature and humidity control are of foremost importance, and this is true whether the finished plywood is to be 1/32 or 2½ inches in thickness.

While plywood manufactured in the United States began with the use of hot animal glues, and the change to substantial production only developed when Perkins first discovered that a satisfactory bonding agent could be obtained by the use of a small percentage of caustic soda used with the starches, preferably cassava flour, the whole industry now is rapidly converting to the hot plate press, using resins and other modern plastic bonding agents having various degrees of resistance to water and bacterial deterioration.

A very important development is the use of short-wave induction heating methods. At the present time only one plant in the United States is manufacturing plywood by this system, and its equipment,



The use of plywood in farm structures.

WILLIS-WAY POSTWAR HOMES

Look ahead! Plan now for postwar business. Learn how the Willis-Way enables you to operate your own profitable postwar Prefab business.

Discuss with your jobber.

C-W PLYWOOD CO.

9 S. CLINTON ST. CHICAGO

DISTRIBUTORS OF PLYWOOD TO THE JOBBING TRADE

100% of Output Kiln Dried

Pilot Rock

Mills at Pilot Rock, Ore.

Sales Office 203 Radio Central Bldg. Spokane, Wash.

Soft-Textured Ponderosa Pine From the John Day District of Eastern Oregon

● Our equipment is of the latest design and has been in use only a short time. It is capable of turning out a high quality lumber from our fine Ponderosa Pine logs. We specialize in Selects and No. 2 Common.

OMAK-KWALITY

Window, Door and Cellar FRAMES

Trim, Mouldings, Casing, Base, Finish Lumber, Furniture Specialties, Etc.

Member Western Pine Assn.

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Mr. R. F. Taylor
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Crystal Lake, Ill.
Mr. Arthur M. Johnson
1448 West 73rd St.
Kansas City, Mo.

BILES-COLEMAN LUMBER CO., Inc. OMAK, WASH.

while fairly recent, is already partially obsolete, as improvements have developed rapidly. At this writing, it does not seem economical to use the short-wave induction process in the manufacture of thin plywood. It is economical for plywood of ¾ inch thickness or greater, and, unquestionably, the product is superior to plywood made in the hot plate press because the high frequency current heats and polymerises the resins while allowing the wood itself to remain at relatively low temperature. On very thick assemblies the advantage is quite startling, because a piece 2½ to 3 inches in thickness can be cured in five minutes by this method, with complete uniformity throughout. Such an assembly takes several hours in the conventional hot plate press and the result would be doubtful because of the danger of over curing the outer plies and under curing the inner ones. This process, while still in its infancy, is basically so sound that the use of inductive heating will grow rapidly throughout the industry.

The technique of molding plywood into shapes and compound curves in large production can be divided into two general systems, molding and reinforcing of molded members at the same time, over a male mold, and a similar method in a female form. Both when properly handled achieve highly satisfactory results, but the technique involved is such that only those organizations properly staffed with chemists, engineers and wood technologists have been successful in large production. In each case, fluid pressure, obtained by the use of steam and compressed air, with the assembly in a rubber or rubberized cloth bag, is achieved by means of an autoclave. Both processes are somewhat cumbersome and do not lend themselves to low priced production. This, however, may be rapidly changed by the use of other techniques, and here again, short-wave induction looms large.

Large quantities of metal covered plywood have been and are being manufactured, because a very thin metal superimposed upon plywood can perform the same functions as a more expensive thick metal. The plastics are not only employed as bonding agents, but also as impregnants, and are sometimes superimposed upon plywood in the form of impregnated pulp or paper which have been put under heat and pressure, either separately or at the time the plywood is manufactured. Such products, because of their additional wearing qualities and the use of color are bound to find tremendous markets. In the aircraft field itself, it may be found that a combination of all three in many forms will make available the more important features of each.

Utilizing the knowledge developed by the wood technologists and the new techniques of the resin adhesives and impregnants created by the chemists, the engineers have devised precision machinery and equipment that result not only in greater production but also in improved quality.

With the improvements in the resins which provide bonds that withstand all the ravages of the elements, many new and unusual uses for hardwood plywood have developed in rapid succession, among them many that will play an important part in our daily lives. Some of them, indeed, lend themselves to application in fields which up to now have offered no opportunity to the lumber industry. The new markets which will thus be opened to the lumber dealer are almost beyond imagination. The day of substitutes for wood products is gone!

For 25 Years

We have been represented in the advertising pages of the American Lumberman.

We went through World War I together.
We are now fighting through World War II.
And it's tougher — has more headaches and restrictions.

But when Victory comes, as come it will, we will still have the "Doors" open — the plywood and millwork in the warehouse. We will be ready to take care of our customers in the good old normal way again.

In the meantime, we are doing the best we can. We know it isn't enough but we are proud of our record under these unusual circumstances.

Pacific Mutual Door Co.

Tacoma, Wash.

"A National Organization"

Pioneer Distributors of

DOUGLAS FIR PLYWOOD and Millwork

Offices and warehouses maintained at:

Baltimore, Md.	Chicago, Ill.	Kansas City, Kans.
Garwood, N. J.	St. Paul, Minn.	Los Angeles, Calif.

Buy Bonds Now — buy Pamudo Products after Victory

How Far Will Government Control Recede?

WHAT ABOUT government controls of business in the period after the war?

Your guess is as good as any and better than most; so consider what follows to be nothing more than raw materials for any use you may care to make of them. Keep in mind that this is not a simple question; that it can not be decided by wishful thinking; that it has to turn on things as they are.

You are a lumberman. The chances are a hundred to nothing that you look forward, at the earliest possible moment, to the lifting of purely war-time restrictions. You're fed to the teeth on these things. You want to return to free economy, personal initiative and familiar ways of doing business.

Most Americans go along with you; with a few reservations. The public will *not* support business methods, no matter how familiar and traditional, unless these methods work practically for the public benefit in the new era. If they don't then no amount of appeal for support of the good old ways will have any practical effect.

There are two opposed positions in regard to government controls. Both are extreme; neither has much if any chance of adoption. They are mentioned as nothing more than surveyors' boundary stakes in mapping the field.

At the extreme right is a proposal to lift *all* public restraints on business, including governmental policing of industry and commerce. These police powers have been brought in through the years by opposed political parties, as these parties have succeeded each other in national control. These powers are such things as anti-trust laws; the Inter-State Commerce, Federal Trade and Securities and Exchange Commissions. No point in talking about them, for they will be continued. You wouldn't like it, and you couldn't stay in business, if they were lifted.

At the extreme left is the proposal that war-time controls be continued and *extended;* for the purpose of creating a new pattern of production and distribution. Give the reformers and ideologists credit for being reasonably sincere; even though you think, as we do, that they are wrong. They can be of indirect use, if they compel us to justify and improve our own position.

The reformers say they want maximum goods and services for the public at the least cost; and, if these things are correctly understood, we agree. But the reformers talk of a "mature economy"; meaning one that has reached its top limits; meaning that costs can be reduced only by cutting out intermediate and "useless" services. They look upon commission men, wholesalers and even retailers as unnecessary. They would reduce all business to the mediocrity of rigid "public standards"; thus cutting out the incentive to gain trade through the creation of superior goods and services. With these points, of course, we do not agree.

Reasonable competition, stopping short of the destructive practices controlled by the police powers over business, can and do expand the national economy, reduce costs and raise the quality of goods and services. One example: Bus competition, in the prewar years, led railroads to improve their transportation service; and this improvement led to larger revenues.

Those rigid "public standards" which the reformers ask for set up a negative competition; in terms of the least service and the least quality needed to get by the government inspectors. The syndicalist production and the co-operative distribution at which the reformers aim would, if uncorrected by private competition, reduce American commerce to lower and lower levels. We'd have a "mature economy" with a vengeance; one degenerating into senility.

But there's no point in dwelling upon these extremes. The government's policing of business will be continued. The syndicalist, "public standards" economy has little chance of acceptance. Some effort will be made to introduce it, probably one item at a time. This effort will not succeed, unless we fall flat on our faces in the job of handling business our way. Best defense is to make our methods *work.*

Probable course: Setting up of what is commonly known as "compensatory economy." Briefly, parallel public and private projects; with the public taking up the slack and tapering off as the change-back is effected and private industry is able to take over.

Some business men object; believe that unless public controls and helps are dropped now they'll become permanent fixtures. A crutch can become a habit. Seems no way of avoiding this risk; and here are a few random points in illustration:

In the first war, the country's industry, manpower and finances were engaged about twenty-five percent; in this war, about seventy percent. Come peace, the national income (used as an index of the national effort) will be dividing at the rate of a little more than a hundred billion dollars in "public works", including all the war effort, and a little less than fifty billion dollars in civilian goods and services. To re-employ war workers and demobilized service men it will be necessary to maintain most of that hundred and fifty billion dollars of income. If the percentage is merely reversed—a hundred billions in civilian industry and fifty billions in public works — the change-over will still be enormous. There will be from two to two and a half times as many workers to be placed in private employment as there were unemployed at the depth of the depression.

Putting these workers back into civilian jobs should be easier than it was in the depression, for there are more savings available to buy the goods they make. None the less, the number to be relocated is staggering. Add the further fact that industry has been highly militarized and that it will take from six months to two years or even longer to re-tool the factories, build up sales forces and re-establish markets.

Add the further fact that war industrial experience has developed amazing labor-saving machines and methods. It's roughly estimated that these new methods will make possible the production of a given amount of goods with twenty percent fewer hands. Add also the fact that new materials, such as light metals and plywood, will create shifts in old markets.

Our industry is given the best chance for a speedy change-back and for a big, ready-made market.

WILLIAM SCHUETTE Co.
PITTSBURGH, PA.

New York Office:
41 E. 42nd St.

FOUNDED IN 1876

Since our foundation, 67 years ago, we have specialized in White Pine.

When Michigan showed signs of being "cut out", we followed the Industry West and were one of the first to introduce Idaho White Pine. Then followed Ponderosa Pine, sometimes called "Western White Pine"—our Westmont Pine from Western Montana was this species — and Sugar Pine.

As the West Coast opened further we added Douglas Fir, Spruce, Plywood, Cedar and West Coast Products to our lists. Yet throughout we have held to our "first love" and continue to concentrate on the Pines.

Today, as during our 67 years, our primary emphasis is on satisfaction to the customer.

WHITE PINE, IDAHO, PONDEROSA, SUGAR PINE
FIR WALLBOARD, CEDAR & WEST COAST PRODUCTS

FRY-FULTON LUMBER CO.

144 Carroll Street, St. Louis, Mo. (4)

Our
St. Louis Yards Carry Stocks of
White Pine and Sugar Pine—Pattern and Flask Lumber—Mahogany —Steamed Walnut
Air-Dried and Kiln-Dried Hardwoods
Ponderosa Pine
Veneers and Plywoods
Specialties: Tough Ash, Thick Oak

Tel. CENtral 5250

Direct Mill Shipments

All Southern, Appalachian and Northern Hardwoods and Dimension

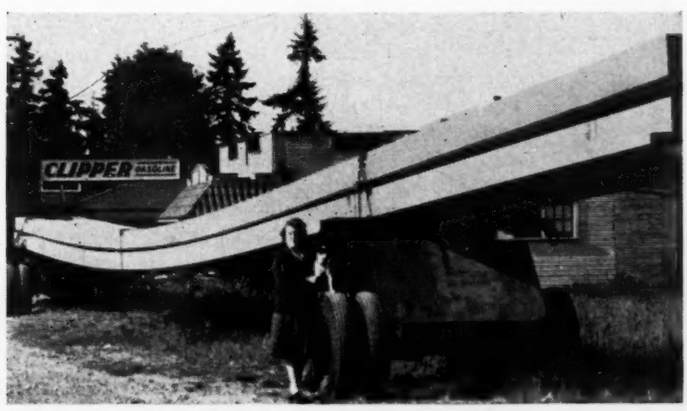
Ponderosa Pine and Fir

Plywood

Long Timbers

We are supplying keels up to 136′ long for Victory ships. Millions of feet of our old-growth Douglas Fir have gone into war jobs—mine-sweepers, bodies of ships, spars, stiff-leg derricks, shipways and docks, war industry and war housing construction.

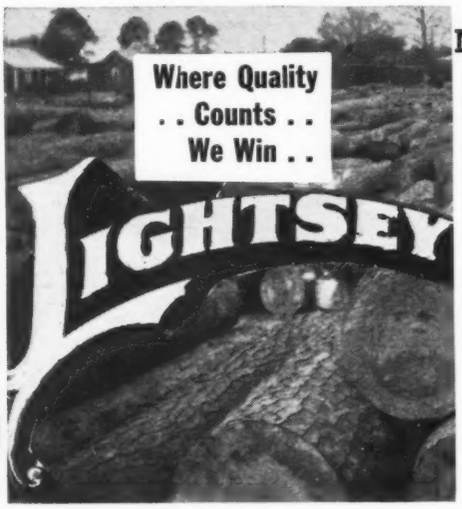
Pacific National
LUMBER COMPANY
TACOMA, WASHINGTON



Load of six timbers, 110′ long, weighing 14 tons, on way for use as keels for mine-sweepers.

End Matched Pine, Oak, Maple and Gum Flooring

NOFMA CERTIFIED OAK FLOORS



Manufacturers Band and Gang Sawn N. C. Pine Cypress Hardwoods Modern Kiln and Planing Mill Facilities

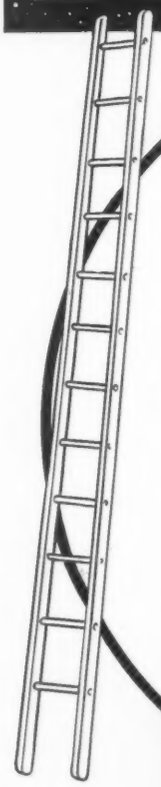
KNOWN FOR QUALITY FOR 34 YEARS

We are proud of our record of service to lumber and flooring buyers, but more proud of the quality reputation we have built up for our products through long years of painstaking attention to every manufacturing and shipping detail. Depend on us now for your war needs . . . and when peace comes for your post-war needs.

LIGHTSEY BROTHERS

Miley, So. Carolina

BABCOCK



Ladder Satisfaction for 38 Years

While we are currently unable to get materials to take any orders for ladders, even on high priorities, we are anxious to keep our name and products before all of you lumber dealers who in normal times are among our very best customers.

We have been years building up our quality reputation for Babcock Genuine Spruce Ladders and we hope all of you lumber dealer friends who have patronized us in years past will continue to do so as soon as peace comes. We can assure you that the moment material restrictions are relaxed, we will be anxious to resume our extremely pleasant lumber dealer contacts—and here's hoping for an early United Nations Victory.

The W. W. Babcock Co.
BATH, N. Y.

But let's look a moment at our special problems.

One of our biggest potential markets is among these industrial workers. They have war bonds. They want homes. But an industrial worker is not a home-building prospect until he's relocated in a civilian job and has reasonable assurance of keeping it. Our biggest market will not open up fully until industry in general has made the change-back.

Those who should know tell us that this time there's much caution on the spending front among those who have the savings. They remember about the post-war depression in 1921; will wait until they feel assurance that the emerging civilian economy is a going concern. They may need those savings for groceries, should this bigger war stir up a bigger depression. This vague but general cloud of reluctance about cashing and spending bonds will have fairly specific echoes in the post-war controls and must be taken into account.

Such factors, and of course we've named chiefly negative factors, lie behind the need for a period of compensatory economy.

Something is known about public attitudes. A survey made for the National Association of Manufacturers, among workers of all wage levels, showed that eighty percent opposed government operation of private business. But ninety-two percent favored post-war planning *now*. Not hard to read that one. They're for private business; *but* they don't intend to be unemployed. Post-war planning, as they see it, includes enough public works to cushion the change-back; includes also enough public controls, such as rationing and ceiling prices, to keep the economy balanced *while* the change-back is being effected. With these qualifications, they're for a return to private business and for a tapering off of controls and other aids as rapidly as these things work themselves out of useful jobs.

Most experts say the construction industry, with its backlog demand for homes, will be the important industry in effecting the change-back. Home building takes little re-tooling and will be able to find building mechanics. The U. S. Chamber of Commerce says that more than a million families plan to build homes within six months after the war ends. The National Resources Board says the country

will need about a million new homes a year for ten years; that about ten million town and city homes need major rehabilitation. Within a reasonable time after the end of the war we should be able to get building materials, with the possible exception of plumbing and heating. It would seem that things are pointed our way. But, just to be sour about it, let's look at some other things.

We've already said that construction can't come to full development unless and until the whole economic pattern is pretty well worked out; for our customers depend upon other industries for their incomes. Keep that in the back of your mind.

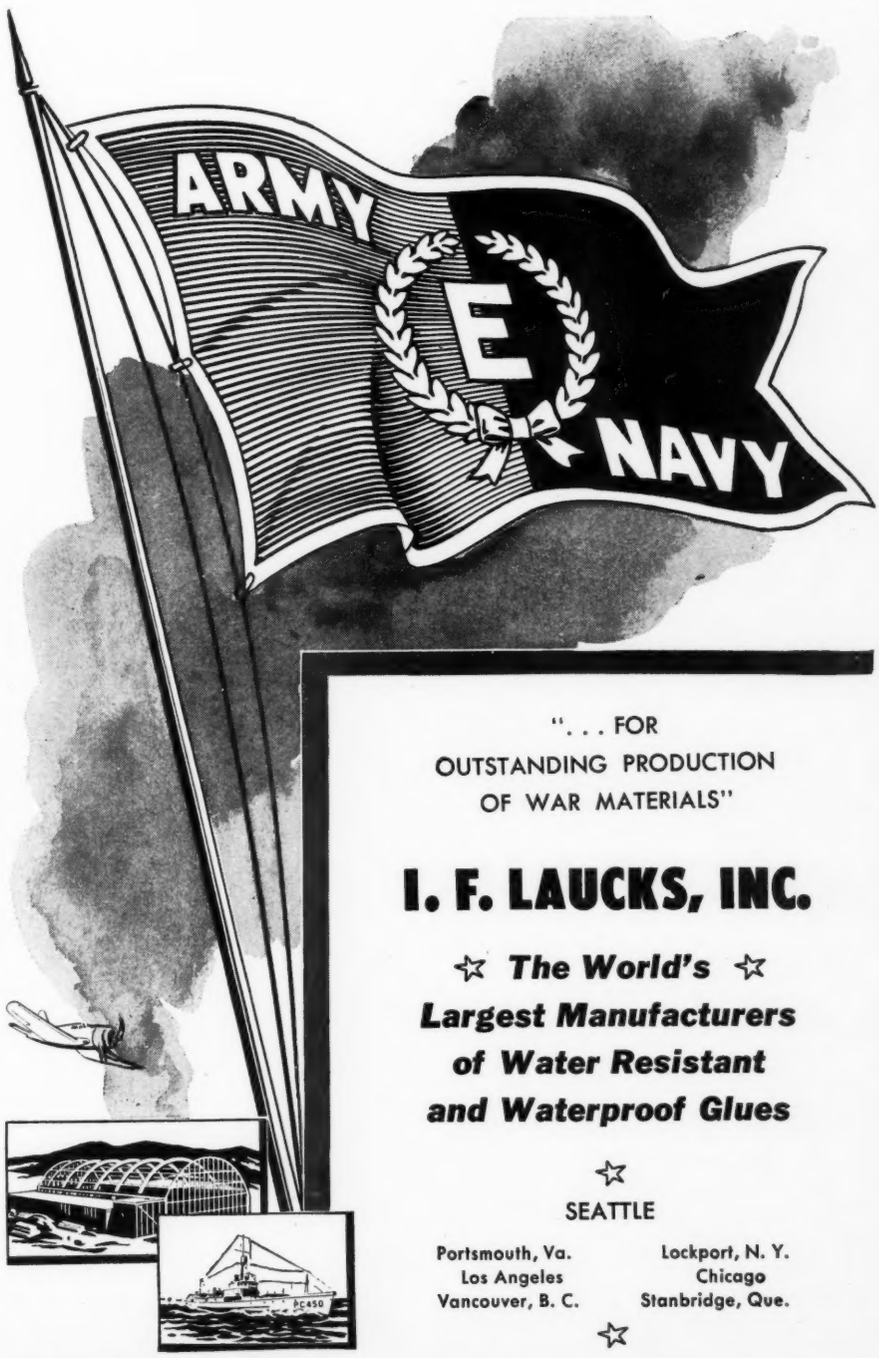
The biggest hazard in the immediate post-war months is inflation; including speculative inflation within our own construction business. Inflation prices make a gay market—for a brief period. It hits first the civilian supplies actually in the hands of the retailer. But few retailers will emerge from the war with much lumber in stock. Suppose price restraints are taken off, and a runaway market develops for whatever lumber is available. This play will immediately hit into that spending reluctance, now showing up among Americans with savings. Sure, the easy-come, easy-go boys will spend it. They'll spread-eagle the market, for a short time. The others will draw back. At best, it will help the dealers with stock very little. At worst, it can set back the building revival a couple of years; and it will give the reformers a powerful argument in promoting their syndicalist, public-standards national economy.

A more immediate effect of removing all public controls: When the war ends, the principal reserve stocks of lumber will be in government pools. Suppose these pools are thrown onto the market, with no controls over equitable distribution. Let's say you're an independent, county-seat retailer; what chance do you think you'd have of getting a reasonable share of this surplus stock? Make no mistake about it. Big buyers, who need not be named here, have a hard eye on those government inventories. Without a public control over distribution, these surpluses will go like the snapping of your finger; but not to the small country yard.

It is probable that rent control will be continued, in a modified form, until private housing gets under way. Spiraling rents will mean spiraling material prices; resulting in checked markets and corresponding unemployment.

So it seems probable that some war-time controls will be continued for a time; rent ceilings, price ceilings, a measure of rationing control.

Plenty of government war-time restraints can be lifted; for example, gasoline rationing, especially if tires are available. Others can and should be lifted in part; as fast as conditions justify. But don't expect *all* of them to be lifted at once. It'll be a tough problem to decide which, and to what extent, these controls should be kept. But in general, better accept "compensatory economy" during the change-over period. In fact, better work for it; to protect fair distribution, restrain speculative inflation and reassure the customers whose confidence is the foundation of post-war business and whose support is the keystone of private business as we want it to be.



". . . FOR
OUTSTANDING PRODUCTION
OF WAR MATERIALS"

I. F. LAUCKS, INC.

☆ *The World's* ☆
Largest Manufacturers of Water Resistant and Waterproof Glues

☆

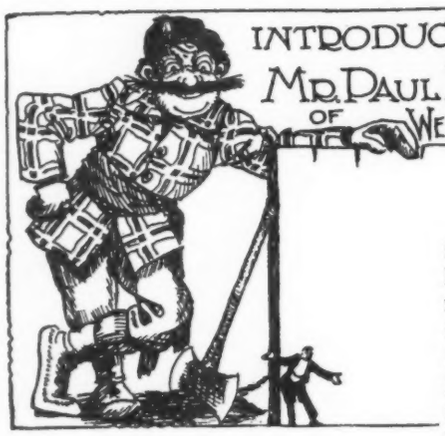
SEATTLE

Portsmouth, Va. — Lockport, N. Y.
Los Angeles — Chicago
Vancouver, B. C. — Stanbridge, Que.

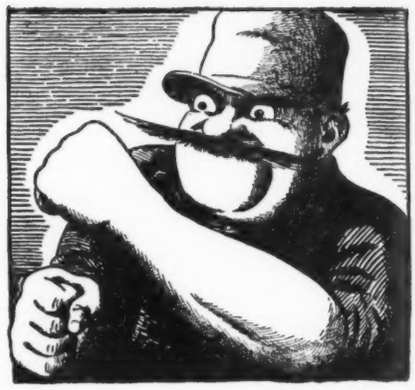
☆

LAUCKS GLUES AND WOOD REPLACE STEEL FOR WAR!

Paul Bunyan's Press Agent



Mr. Laughead's original drawing of Paul Bunyan which was modified shortly thereafter to take its present form.



Since the war Paul's smile has sometimes been missing.

BY J. P. AUSTIN
Western Manager of the American Lumberman

Paul Bunyan is one of the best known characters in American folklore. No other industry has a legendary hero that has found such wide favor with the American Public. But Paul Bunyan was not always so universally known. Although his history dates far back, his name was familiar to only a limited number of pine loggers prior to 1914. Other loggers, practically all mill men, wholesalers and retailers, not to mention the general public, had never heard of him.

Who then, put Paul on the map? Principal credit goes to the Red River Lumber Co. and W. B. Laughead, its advertising man—artist, and creator of the likeness of Paul Bunyan which everyone knows so well today. No star of the stage or screen has ever had a better press agent than has Paul Bunyan. A booklet, *Paul Bunyan and His Big Blue Ox*, published by the Red River company has gone in its twelfth edition for a total of 100,000 copies. Except for the original mailing to the pine trade in 1922, no copies have been sent out except upon request.

Through this book and other efforts the Red River company Paul has gone into college classrooms as the subject of study in advertising, psychology, folklore and Americana curricula. The book has been a text in training schools for Boy Scout leaders. It has been the subject of much interesting correspondence. A missionary sent a print of the god, Pan Ku, who looks like Paul Bunyan, stands by a log with an axe, and whose legendary job it was to build the world. "The clever Chinese," wrote the missionary, "anticipated even Paul Bunyan by several centuries." A commissar of Soviet Russia wrote about the technique of propaganda and wanted a copy of the book for translation. Copies went with Admiral Byrd on his first antarctic expedition, resulting in letters from the members of the party and request for booklets from libraries in the Antipodes. The book has traversed the British Empire through army, navy officers and the judiciary and civil service.

W. B. Laughead, advertising manager of The Red River Lumber Co. and creator of the pictorial or drawn conception of Paul Bunyan that has come to be accepted as the true likeness of that legendary character.

The idea of putting Paul to work for Red River originated with Archie D. Walker, now president of the Red River Lumber Co. in 1914. trade that Red River's new California operation was a big mill and its product was similar to the White and Norway pine the company had been manufacturing in the Lake States.

Mr. Walker had been intrigued with the wonderful tales of Paul Bunyan's exploits he had heard in the north woods. He put it up to Laughead. Laughead who had worked several years in the pine logging camps and knew the stories, had two faces in his memories. One was that of a logging contractor—a genial, round faced, double chinned chap with a shrewd good natured twinkle in his eye; the other a French camp cook who was a big, swaggering blowhard with a fierce mustache. These two faces were merged into the first Paul Bunyan and after a few appearances were slightly modified into the standard trade-mark design now so familiar. Subsequently most issues of AMERICAN LUMBERMAN have contained at least one picture of Paul with his double chin and fierce wiry mustache.

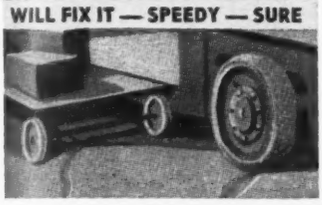
Today the name Paul Bunyan is used everywhere as a simile for things done on a big scale.

HERCULES *Speedy Patch*

Here's How It's Laid

LAY AN ENTIRE NEW FLOOR!

WILL FIX IT — SPEEDY — SURE



The Best Bet you've ever seen for laying a quick, inexpensive, resilient, waterproof, wear-resistant floor or patch over any surface.

USE IT YOURSELF ON YOUR OWN FLOORS—SELL IT TO INDUSTRIAL PLANTS, SCHOOLS, FARMERS, HOMEOWNERS.

For fixing floors and walls, sidewalks, runways, driveways, pointing brick. Comes in Red, Green, Brown, Black and Concrete colors.

DEALERS! Act today! Get this profit. One job sells others. A real money-maker.

Send for folder and price list.

MADE AND GUARANTEED BY
EVERCRETE CORPORATION
19 WEST 44TH. ST. NEW YORK, N. Y.

"ALGER" Brand Long Leaf Yellow Pine

★ **Now—"All Out" To Win the War** ★

Our sturdy Long Leaf Yellow Pine lumber and timber are now going on high priority orders. When peace comes we will welcome the time when we can restore our full accustomed service to all customers—but peace or war, always

Through the Wholesaler

The Alger-Sullivan Lumber Company
CENTURY, FLORIDA

RUBBER STAMPS for Regulation No. 19

The two statements which are required to be certified on orders under the new Priorities Regulation 19 which enables dealers to extend an AA-5 rating to suppliers for lumber or other goods replacing merchandise sold to farmers, are available from the AMERICAN LUMBERMAN, 431 S. Dearborn St. in rubber stamp form. The two stamps read as follows, and the use of each is clear from the text.

* * *

I certify to the War Production Board that I am a farmer and that the supplies covered by this order are needed now and will be used for the operation of a farm.

* * *

The above stamp may be had for $2, with space for the farmer's signature provided.

* * *

I certify, subject to criminal penalties for misrepresentation that the dollar amount of this order is not more than 75% of the sales price of farm supplies which I have sold under Priorities Regulation No. 19 against farmers' certificates now in my possession, and that I have not used the same certificates as the basis for getting a priority on any other order.

* * *

The above stamp is available for $3 with space for a signature provided.

Say to Your Painter Customers:--

Don't throw away old paint brushes

Make them like NEW with Cabot's Brush Cleaner

Cabot's Brush Cleaner works fast—cleans old hardened brushes right down to the heel. Even more important, it is non-caustic, harmless to bristles and settings, keeps brushes in top condition through months of service. You make friends—and help your painter customers *stay in business*—when you offer them this first-choice cleaner. Write for sample today. SAMUEL CABOT, INC., 1521 Oliver Building, Boston, Mass.

Cabot's Brush Cleaner

(*Continued from page* 70)

able home to such an extent and so quickly that such items as weatherstripping and insulation were forced to wait for the depression of the '30s for their great impetus. Sometimes felt weatherstripping was used around casement windows and occasionally certain portions of houses, for instance, the floor of an over-hanging bay, were insulated with a loose rock wool. Insulation of the ceiling, however, was still considered the function of the attic space and the hot, musty smell of the unfinished attic will remain with us for a long time as a childhood memory.

The roofs of 1910 were mostly wood shingles, though for those who could afford it, tile or slate were marks of distinction. The use of standing seam tin roofs, also zinc and copper, was probably more general then than now, as the composition asphalt and asbestos shingles were new on the market. The next decade saw the extensive use of asphalt and asbestos shingles both for new and replacement work.

The art of wood preserving was beginning to be felt in 1910 as it had in Europe for 40 years previous. This development released wood construction from some of its tethers, and was a beginning of the general expansion of possibilities in the use of wood.

Drawn window glass replaced the old type window glass which was unrolled from a cylinder blown from the molten glass and was always wavy and full of bubbles. The new glass made it possible to have larger sash openings without going to the expense of plate glass, which still remained the aristocrat in glazing. This development of larger, clearer panes should have allowed us to remove the complicating muntins from the sash but, all these improvements notwithstanding, the "fashionable" house just before the war still had its windows divided into small panes.

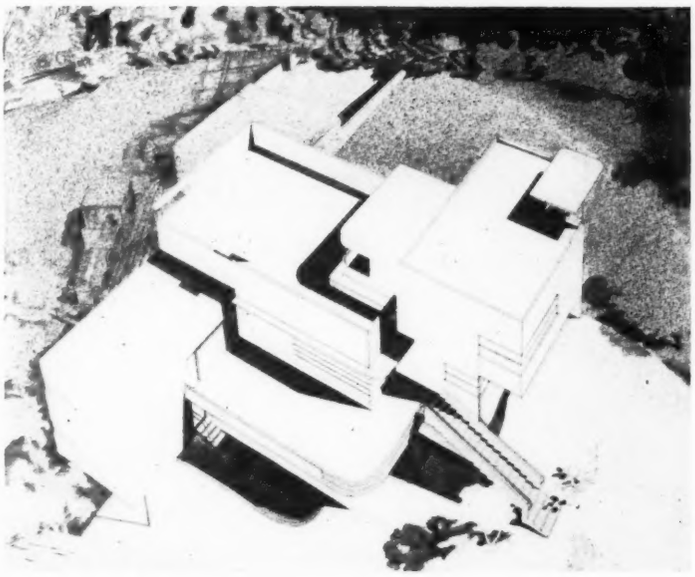
Concrete for foundations attained more general use after 1910, though they had, of course, been used before that. Stone, brick and tile foundations up until this time had vied with concrete for popularity, but soon concrete practically had the field to itself, either poured as a monolith or laid up in blocks. The waterproofing of the foundations did much to rescue the usability of the basement space. These waterproofings took several forms, integral or applied. Applied waterproofing were generally made with an asphalt base and brushed on to the outside of the foundations before backfilling. Those using a water emulsion did not require a dry foundation, which, in small house work increased its usefulness many fold. The integral waterproofing was mixed with the concrete in the mixer and proved very satisfactory, though of course it did not seal up any cracks or joints between pourings.

Reinforced concrete houses, in whole or in part, were experimented with at that time. The idea of a single form which could be erected

In 1910 it was the mode to change materials at sill or head lines. The heterogeneous color and texture obtained is pictured in this example where the foundation is red brick, the first floor walls tan stucco, the second floor walls green stained shingles, the roof brown stained shingles, and the trim white. This is a rear view. A porch darkened the entire front of the house

In the early 1900's many houses were built using some of the characteristics of the "styles" as well as those of the new architecture of the Chicago School. This house has dormers, overhang and half timber work (fake) of the English combined with the broad porch eaves, ornamental leaded glass on the entrance door and flat oak interior woodwork of the Chicago houses. The house is comfortable, but dark, and the relation of the interior to the grounds is difficult

Houses at the time of World War I, either aping the colonial or forgetting the whole business of design entirely and gaining refuge in a square stucco box. The feeling that something was wrong with the design of modern houses was prevalent, but few knew what to do about it



The "International Style" imported from Europe, based on the premise that a house should be a "machine to live in." It was therefore cold and unhospitable looking. Truly, the machine should help us make better houses but it is not necessary that we live in the machine. This negation of the qualities of home did much harm to the advance of a true American architecture. We are now beginning to live it down.

The English house typical of the boom years. Towers, half timber, stone, brick, stucco, clapboards, finials, arches, diamond panes, chimney pots, all crowded onto one house in a mad search for novelty and race to outdo the neighbors.

and re-erected to form the four walls of a house held the fancy of many builders, and all over the country there are now standing these monuments to experimentation.

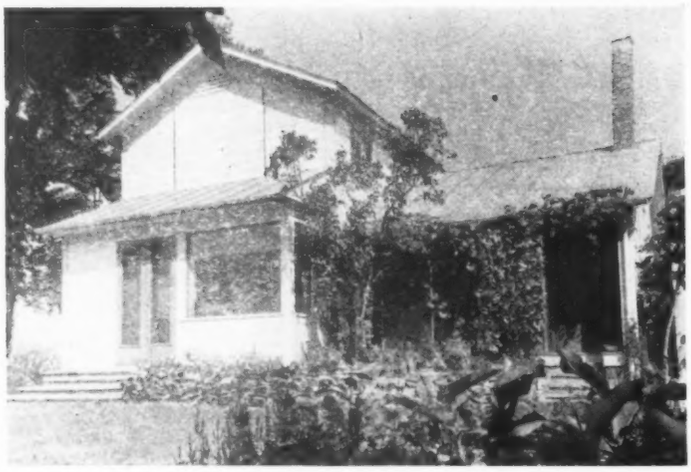
All these changes in methods in construction indicated that the house was growing up. That public taste and the general exploitation of these developments did not produce a better designed house has sometimes been explained by saying that the public was so engrossed with the material development that they did not have time to consider how they were put together and, aside from their actual use in a structure, how they could be made to produce houses for better living.

Cement stucco over metal lath was used extensively after 1900. That a realization of the plastic qualities in design possible with this new material, cement, was not more generally recognized can only be considered a loss to the timely developments of the architecture of the house. It should be quite evident that the conception of a skin put on in one continuous troweled surface should be quite different from that of a skin laid up of individual bricks or applied in individual boards. Unfortunately, the design of the house was first made and then the choice of exterior materials determined the surface that would meet the eye. It was a case of beauty being skin-deep and we all know that it takes more than a good complexion to make a beautiful woman, however much good a beautiful skin can do.

The balloon frame was, to a large extent, responsible for this idea then prevalent that a skin of a certain style determined the style of the house. The balloon frame was a natural construction, readily adaptable to modern utilities. Wires and pipes could be placed in the hollow spaces. It was so practical that it was used even when brick and masonry exteriors were applied in imitation of stone, brick or masonry houses.

When the use of the "styles" is carried to such extremes it is evident what the building materials industries have had to face in the development of new materials. Everytime a new material was put on the market it had to be put on in the shape of something else. Wallboards had to imitate tile or wood paneling. Plywood, which could be made in large sheets, had to be subdivided with styles and rails to make it look like the old style panels where size had been limited by the shrinkage and expansion of the material. Linoleum, when first introduced, was printed or embossed to look like tile or marble. Metal trim, instead of being enameled or plated to look like metal was grained to look like wood, even retaining the old moulding shape that had been used in Colonial woodwork. Sheet plastic materials were made to look like cloth or wood by a photographic process.

It may be that the way to introduce a material is by innuendo, but it would seem that if the correct educational advertising had been used these superior materials could have been accept-



On this remodelled farmhouse asbestos siding was used in such a way that it showed itself to be just what it is, and the result is very pleasing. Asbestos siding comes cut square to a uniform length. This suggested aligning the ends vertically, placing a copper clad kraft paper fin at the vertical joint to articulate the material while making the joint waterproof—and thereby adding to the vocabulary of American architecture by the proud use of our modern materials.

able for themselves alone, to add to the rich vernacular of a genuine American architecture, resulting naturally from our industrial supremacy.

Prefabrication

Louis Bossert & Sons, of Brooklyn, N. Y., probably manufactured the first prefabricated houses, which were also demountable, in 1859. In 1892 Ernest F. Hodgson Company of Boston started manufacture of a sectional, bolt assembled house. Most of these houses were sold for summer resort use. They were houses without utilities and therefore were not the complete prefabricated house that we think of today.

From 1905 to 1929 many pre-cut houses were sold by various companies. Even Frank Lloyd Wright was active in the design of pre-cut houses, his system being manufactured in Milwaukee and called the American System. He said at that time "Simply selling houses at less cost means nothing at all to me. To sell beautiful houses at less cost means everything. A beautiful house means a truer, better house in every way." That is a dictum which could profitably be followed by any of the prefabricators today.

The search for a new industry during the depression of the 1930s focused attention on the prefabrication of homes. At the Chicago Century of Progress Exposition in 1933 and 1934 were two houses of steel and another framed with steel. It seemed to be the general thought that because automobile bodies were of steel that manufactured homes also should be. The steel companies were naturally behind such development and, as is frequently the case, they tried to make everything they could of steel whether or not it served the purpose. In so doing they built up a great public resistance to the cold, unhospitable looking "sardine cans" as they were called by the public. It was to be expected that early experiments would be unsuccessful. It is entirely possible that steel has a place in the prefabricated house just as any other material, but if a successful prefabricated house had been designed using only a small amount of steel, and that house had sold in good numbers, they would have sold a great deal more steel than they did, for the amount they did sell was negligible. This same principal of vested interest can apply to any other material as well as there is nothing that will give a material a bad name as quickly as selling it for a use to which it is not suited.

Many systems were promoted, some built, some remaining in the paper stage. One of the most fanciful which caught the attention of the Sunday supplements was entirely suspended from a central mast. Others were built around a core which included the plumbing, heating, air conditioning, electrical and mechanical devices in a large metal cabinet, one side becoming the kitchen, the other the bath.

Much research was done between 1935 and 1941 by various organizations and associations. The John B. Pierce Foundation did considerable experimenting as did the Douglas Fir Plywood Association, Forest Products Laboratories and others. The principal of "stressed skin" was developed whereby a sheet of plywood was glued on to each side of a light weight wood frame work, thus using the full strength of the plywood in all directions, while retaining a light and easily handled practical wall panel.

Prefabricated plywood house using the "stressed skin" principle. Panels are eight feet wide, the windows slide.

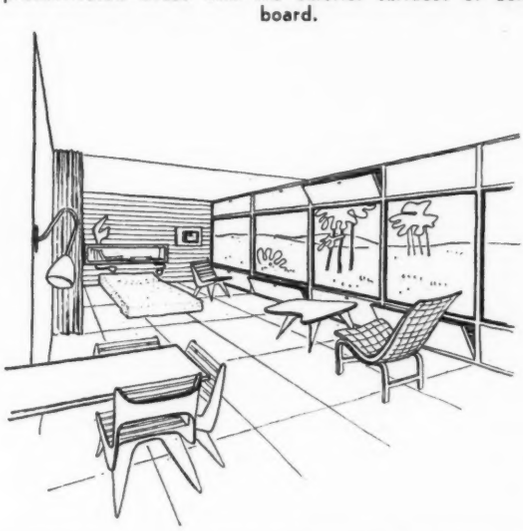
Manufacturers of wallboard quickly interested themselves in the field, developing their boards in large, strong sheets, impregnated to make them weatherproof for outside use and finished to make a presentable surface for interior use.

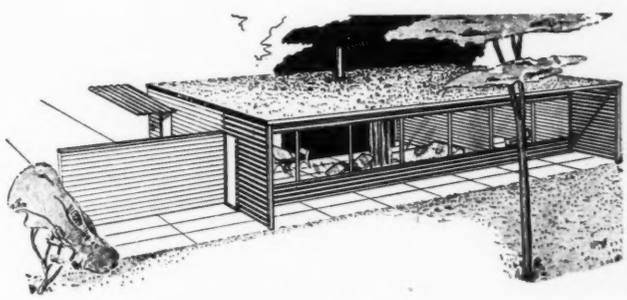
The development of such large panels was necessary to the growth of prefabrication.

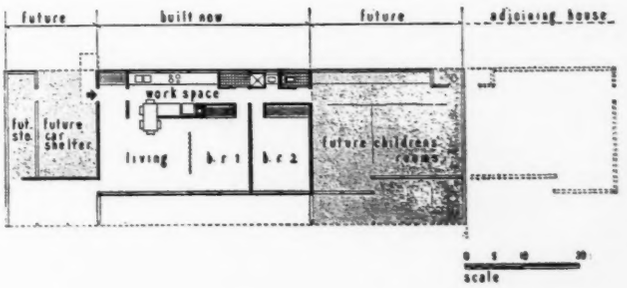
Prefabricated house of egg-crate construction with window panels extending from floor to eaves as separate units. The window trim therefore acts to cover the panel joints.

A prefabricated house with the exterior surfaces of composition board.

Obviously plaster could not be used because it would have to be applied after the house was erected and would cause delay in applying interior trim and paint. That this influence of large sheets and the absence of water during construction, which is absorbed by the wood frame causing swelling and later shrinkage, will be extended to custom built houses in a much larger scale than heretofore is a foregone conclusion. The ingenuity with which designers have used these large panels promises to influence the appearance of the American home. The mistake which is so easy to make, which is the same mistake we have pointed out with regard to other materials, is to make the material look like something which it is to succeed. It is axiomatic that if the material, and the way in which it is used, are correct, then the appearance must be correct too. It matters little if it is temporarily strange to the eye. It is much better to have it







A suggestion for the prefabricated house of the future. The southern side of the house is mostly of glass, with a projecting roof that shuts out the hot summer sun but admits the warming rays of the sun in the winter. The plan shows how the living areas are concentrated on the south. Bed room 1 becomes part of the living room when the house is expanded so the living space stays in proportion to the size of the house. Interior views shows how living room and bed room 1 can be combined into a spacious double-purpose area, even before the house is expanded. Notice the ventilating panels above and below the fixed window units.

strange for a few months than to have it wrong forever.

The trend to large panels is not confined to the wall, but the fallacy of roofing a prefabricated house bit by bit in the shingle method is being eliminated by the development of insulating sheathing panels complete with asphalt roofing as an integral part. It is quite obvious that the trend, not only in prefabrication but in all building is towards larger units and units which serve more than one purpose. Thus, these roofing panels serve as roof sheathing, insulation and roofing all in one fell swoop.

Other developments brought about by prefabrication which will invade the custom market are pre-hung doors, prefabricated closets, and tempered composition hard boards which can be used in their natural state or can be had with a hard glazed surface for use in kitchen and bath. Mouldings of metal, and now plastic, have been developed to use in any conceivable circumstance to close the joints or bind the edges of these panels.

Heating plant flues have been developed of transite and of vitreous enamel steel surrounded by insulation. These do away with heavy chimneys and their foundations.

The development of all these materials and the methods that go with them will change the appearance of the house beyond that which we know now. We have a new vocabulary, so new and different from that of the past, that it will be impossible to continue designing houses, prefabricated or custom built, in the image of those of our forefathers. True there are many attempts at forcing these modern materials into the shapes of the past, but they are abject failures, unadmired alike by those who hold the past in respect or view the future with promise.

The Great Depression

One fortunate and natural result of the depression of the 1930s was the development by the manufacturers of new materials and fixtures at lower costs than those which had been generally sold during the boom years. While the house of the '20s was expensively done with hand adzed timbers, heavy carved woodwork, wrought iron railings, cut stone and very little regard to the economies of construction, those of the 1930s took a right about face to simplicity, elimination of unessentials, and a better organized plan. Overhanging cornices were cut off so there was no longer a deep projection, a measure of economy for the moment only. The suburban house was generally rectangular and extremely simple in detail until money began to be easier toward the end of the decade.

Much more attention was paid to economy of heating. This was the impetus that brought the warm air furnace back into favor, after having lost out to the hot water systems. Oil and gas burners and coal stokers were almost universally sold except in the very inexpensive houses, and with the eye focused on enconomy and comfort the insulation of the home became one of the most considered elements of construction, for indeed it is an element.

Rigid composition board exterior sheeting, in combination with insulating board plaster lath, was advocated by many for sidewall insulation. Those who preferred to retain wood sheathing used wood batts made of glass or rock wool or blanket type insulation made of wood fibres or other vegetable fibres.

Reflective type metallic insulation, sometimes in combination with insulating board or wire lath, was used in great amounts. The second floor ceiling—attics were usually eliminated—was always insulated, sometimes with rock wool, in batts or loose, sometimes with light foamy pellets comprising multitudinous air cells poured into the space between the joists.

The typical house of the 30's, symmetrical, simple, but unimaginative and streotyped.

A few years previous to this the construction of houses in a given locality was a stereotyped thing. Now, though all basically balloon framed, the enclosing and finishing methods, the insulation and the utilities were gaining a wholesome variety, all toward the same end—the comfort and convenience of the owner.

While originality was being shown in the developments by manufacturers the plan and design of the house suffered by repetition ad nauseum. Though people professed to be afraid of the regimentation which prefabrication might impose they were blind to the regimentation they themselves were creating. House after house in any new subdivision was the same in its basic elements. Living room on one side, dining room and kitchen on the other, with a central stair hall. The exterior was symmetrical, doorway in the middle with a window directly over it, a window on each side, perhaps bays, with a window directly over each. Some were surfaced with brick, others with siding. Some were

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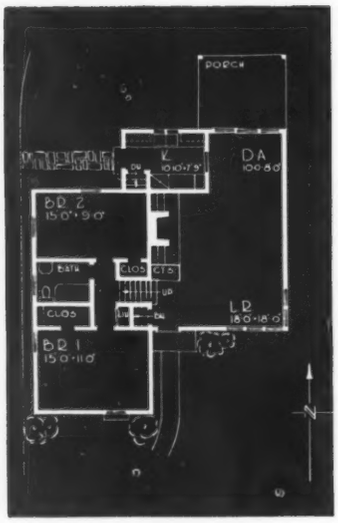
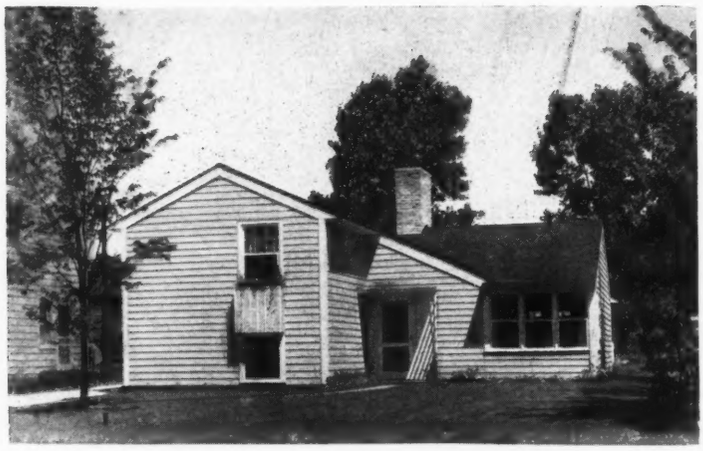




A transition to a free planning of the house to meet the requirements of the family. Here old materials are used where they best solved the problem, clapboards, double hung windows. The plan is original and shows itself in the massing of the exterior shapes and rooflines. The living room, dining and kitchen areas are at ground level, while the bed rooms are half a flight up. The basement is under the bed rooms only, the front half being a den-guest room, with bath, the rear portion being laundry and heater room.

painted white with green shutters, others, white with blue shutters. But that was the type of house that was still generally being built when the war closed down on private construction.

A New Architecture

Some few architects and designers saw the fallacy of the endless repetition of mediocrity and explored paths of development in design just as the manufacturers had explored those of research. It was evident that the old colonial chassis could not hold all the modern improvements. They began, timidly at first, to try something a little original for adventuresome clients. They built houses which were free and pliant, though sometimes retaining elements from the colonial just to ease the shock of transition which clients quite naturally have, gradually becoming bolder and eschewing the meaningless elements altogether. As was to be expected many of these houses were unsuccessful, while others were the epitome of livability and comfort.

Common sense ruled the designs of these houses, and included in the problems to be solved in the design were the living habits and preferences of the family, the hobbies and vocations, their recreation and idiosyncracies.

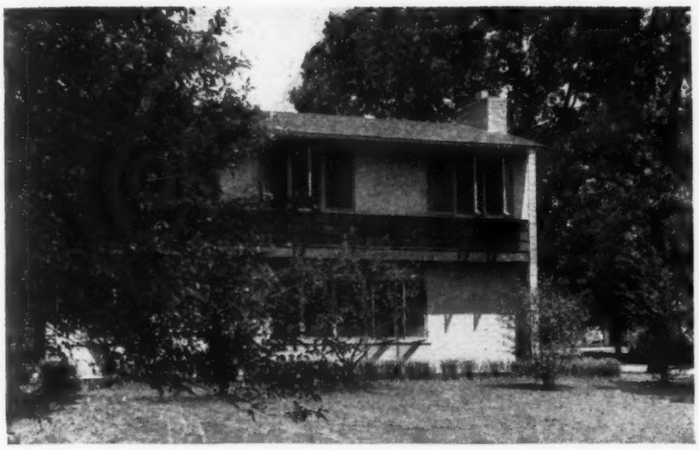
The new materials and methods were used without thought of torturing them into preconceived notions of colonial shapes, either decorative or structural. The natural use of materials made the house itself natural. The natural house is a restful house. They were not designed as settings for pink teas, but were meant to be lived in by the whole family, including the dog. They were flexible in plan so that they were cozy when the group was small but open enough so that spaciousness was the impression when a large gathering assembled.

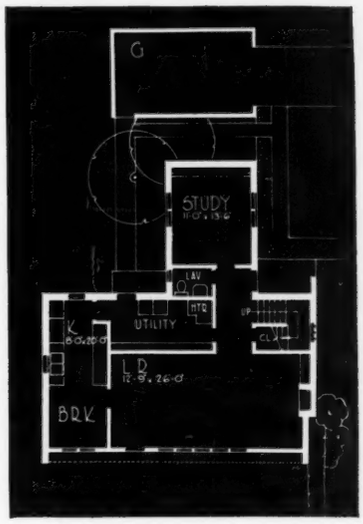
Best of all, these designers took their cue from those architects of the Chicago School who thought they had failed so miserably in furthering the cause of architecture. The open plan, the intimate relation of house and grounds, the natural use of structure as a means of determining the shape of a house (the old way was to determine the shape and then try to work out the structure) all had their inception in the Chicago houses of 30 years ago and were improved by applying greater freedom of design, allowable by an easing of the rigidity of social customs and by the magnificent possibilities of new materials.

No credit can be taken by the designers without giving equal credit to the manufacturers; nor can the manufacturers claim complete credit for the success of the materials without thanking these designers who are showing them how to use them in manners befitting their position in modern technological development.

Houses Postwar

The developments which are releasing the house from the bondage of the past are many. Insulating glass block, which can be used in a most decorative manner, admitting most any quality of light desired and at the same time





The garden side of a 1942 house shows the banks of windows, as many or as few as are needed for the rooms. Overhangs of roof and of second floor shade the south living rooms from the hot summer sun but allow the winter sun to come in when the angle of the sun's rays is less. Materials are used naturally and therefore blend with the landscape. The study is separated from the remainder of the house, but adjacent to the entrance, as the owner is a teacher and has students call at his home for help. These plans are examples of the beginnings of free thinking in solving the problems of a proper home for American life.

conserving heat, changed the whole conception of the definition of space. The wall dissolves, yet is not a window, certainly not a wall. Double glazing with a permanently sealed partial vacuum between the layers which may be multiple, will allow large areas of windows so that even in the winter time the house will be comfortable and light, and in the summer time the glazed doors may be pushed to one side to open up the whole room to the garden.

The use of the improved window glass or plate glass, will make these large areas as attractive as the garden itself. Mirrors will give new spaciousness to interiors and will be used to extend views in close quarters where long vistas would otherwise be unobtainable. Heat absorbing glasses can be used where maximum light is desired without the added heat from the sun which usually accompanies large window areas to the south. Tempered glass will find its way into the home for partitions and doors and even canopies and many other uses which the imagination will bring about. Structural glass will be used for interior as well as exterior surfaces. Figured and pressed glass will be used more extensively than it has in the past as the future will bring a simplification of partitions and glass will solve the problem of privacy without necessitating the erection of a heavy partition.

Though paint in colonial times was used to considerable extent the variety was necessarily limited because pigments were obtained generally from local earths or vegetable matters. Despite the limitation of pigments in those days the colors which they obtained and used were much more pleasing and in much greater variety, paradoxically, than the colors and variety in general use today. Our pigments today are infinitely better and more permanent, our paints, oils and driers are much more satisfactory. It behooves the future to bring about a better, general understanding of the use of paint and color than was evident before the war. Again the research of the manufacturers has produced most practical materials, suitable for any purpose. And again it is the lack of imagination which has prevented the general use to the full of the amazing properties of these materials. The postwar world would be one of color, and paints, varnishes, stains and all the accompanying finishing products will play their part in making that color beautiful and lasting, not blatant for a day.

Caulking materials, new hardware designs, new interior cabinets, more practical windows and doors, lighting which becomes part of the house and heating which, likewise, is completely out of sight; bathrooms and kitchens which come as units with no dirt catching spaces behind

The interiors of modern homes show a release from the traditional ornamentation and formality. Corner windows open up the room. Natural materials, which may be manufactured or synthetic materials, are used, but they must not imitate something else. Room shapes need not be rectangular and can flow from one to another. Furniture can be built in for neatness, freedom and convenience.

A glass wall of double-glazed panels. The transoms furnish ventilation. Notice acoustic tile on the ceiling.

Again a free plan designed to fit the site. The ground slopes up to the rear so the floor line of the bedroom wing at the right is level with the ground level terrace in the rear. The living room in the center is halfway into the ground at the rear. Here again traditional materials, available, were used in their natural way. The double hung sash have lost their muntins to glory in the larger sheets of clear window glass.

or underneath—all these are developments to be realized, if not directly after the war, certainly within months. These are the things with which a modern America will build its homes.

Hand in hand, those who build and those who manufacture can produce better houses at lower cost for more people. Such things cannot be done by standing still. The post-war challenge is here now. Are we to retrogress when the very materials needed to produce a living American home were available even before the war and therefore certainly will be available after the war? And the newer materials, aggressive methods, and greater scientific knowledge will come rapidly as the manufacturers swing away from the production for warfare to the peace-time production for welfare.

The houses illustrating the latter part of this article were designed by the following architects or companies:

Page

68 Walter Burley Griffin

70 Top three, Frank Lloyd Wright. Bottom, John Van Bergen

176 Top, H. L. Bowen. Bottom, J. M. Brown

177 Middle, Howe and Lescaze. Bottom, Joseph McCoy

178 Top, Gilbert Coddington. Bottom, Plywood Industries, Inc.

181 Top, American Houses, Inc. Middle, Homasote Co. Bottom, George Fred Keck for Revere Copper and Brass Co.

182 Edgar W. Archer

184-185 L. Morgan Yost

186 Top right, L. Morgan Yost. Top left and bottom, George Fred Keck.

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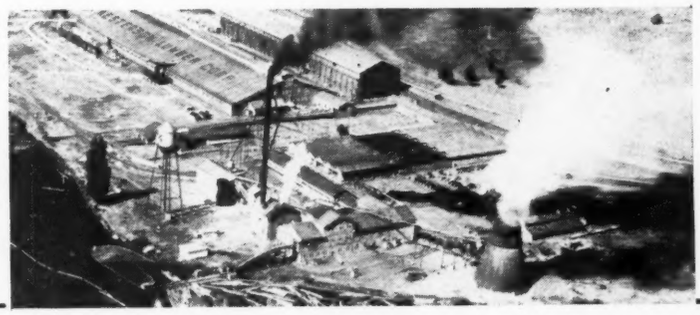

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LETTERS

A corollary to AMERICAN LUMBERMAN'S seventy years of service to the lumber and building materials industry is the holding of thousands of old friends and the continuous acquisition of new ones. It is only natural that many of these friends, on hearing of our plans to present a Reference Number in celebration of the achievement of seven decades of vigorous editorial leadership, should address congratulatory messages to us.

Hundreds of such messages have been received, and while we would like to publish all of them, we feel sure that their authors will agree with us that the space required to do so has been used more effectively by devoting it to informative articles.

We have, therefor, elected to publish only the following from recognized spokesmen for the major branches of the industry. We take this opportunity to thank the authors of all the letters we have received, and to assure them that their expressions of warm friendship and encouragement and the many useful suggestions they have made have been constant sources of help and inspiration to the publishers and editors throughout the work of preparing this issue.—Ed.

Gentlemen:

The history of the AMERICAN LUMBERMAN has been a part of the history of the American lumber industry. It has made a distinguished contribution to the development and high public standing of the lumber and timber products industries. It will, I am sure, be equally diligent, equally interested and competent to contribute to the future efforts of this industry to establish new frontiers in diversified uses of its products, in public understanding of its facts and problems, and in providing permanent opportunities for individual enterprise and employment.

Wilson Compton,
Secretary-Manager

National Lumber Manufacturers Association

Gentlemen:

You should have great pride and satisfaction in preparing your Seventieth Anniversary Number. You have served the lumber industry through all these years with outstanding influence and distinction, and on all sides your name is highly respected. You have gained seventy years of experience without growing old, as demonstrated by the vigorous attention you are now giving to the current and future merchandising problems of the industry.

The National Retail Lumber Dealers Association extends hearty greetings on your Anniversary, and hopes you have only fairly started on your life of devotion to the lumber industry.

W. W. Anderson,
President

National Retail Lumber Dealers Association

Gentlemen:

Hearty congratulations to the AMERICAN LUMBERMAN upon completing 70 years of worthwhile service to the lumber industry of the United States. Trade journals come and go, but the AMERICAN LUMBERMAN has lived through the years. Its regular editions have chronicled the history of the lumber industry for over a half century. In its archives the historians undoubtedly will find treasured gems of informative data not elsewhere obtainable. It has provided a forum for free discussion of constructive ideas and suggestions. It could not have survived as it has without being faithful in honestly reporting worthwhile industry events factually and without bias; unless it championed high standards; unless it was continuously progressive enough to discard that which lacks merit, and conservative enough to retain substantial time-tested principles.

Sid L. Darling,
Secretary

National-American Wholesale Lumber Association

Gentlemen:

I understand that you are preparing an Anniversary Number marking seventy continuous years of publication. Surely this is an enviable record, and my hearty congratulations are extended to you on this achievement.

For nearly twenty-five years I have been a regular reader of the AMERICAN LUMBERMAN. Through good times and bad it has continued to be a personalized journal which has reported the news of the Lumber Fraternity clearly and accurately. Most of us have probably acquired the habit of taking the AMERICAN LUMBERMAN for granted, and that is probably as high a compliment as can be paid to any publication.

Now, more than ever before, it is necessary that you continue to provide the medium whereby the industry knows what is going on. War has complicated all business and the individual in any industry finds it difficult to keep up with changes which affect his everyday affairs. Consequently, the burden of keeping an industry well-informed is greater, and the responsibility, of course, is heavier.

Please accept my congratulations on your distinguished record and best wishes for its continuation.

J. Philip Boyd,
Director

Lumber and Lumber Products Division
War Production Board

Gentlemen:

For myself, as well as in behalf of the U. S. Forest Service I want to extend best wishes and congratulations to the AMERICAN LUMBERMAN on its seventieth anniversary.

During its long lifetime the AMERICAN LUMBERMAN has been a most effective vehicle for keeping forest landowners, operators, the trade and public informed on matters of importance and interest in connection with the lumber business—one of the country's largest and most useful industries. Its management has been generous in providing a medium for ideas of foresters and others concerning the Nation's forest land problems and how to meet them. The interest shown in forest research and, more particularly, the Forest Service work at the Forest Products Laboratory is especially appreciated.

Although there have been times when we have not seen eye to eye on the ways and means of insuring proper cutting practices on forest lands, nevertheless we should be thankful that honest differences of opinion are one of the fundamentals of our democratic way of life, for the preservation of which we are now engaged in all-out war. I feel certain, however, that we are in complete agreement on the basic objectives of so managing all our forest resources—the very life blood of a permanent industry—as to serve best the Nation's welfare, both now and in the future.

Again I want to congratulate the AMERICAN LUMBERMAN and its able management, and to extend best wishes for continued success and many, many more anniversaries.

Lyle F. Watts,
Chief,
Forest Service

United States Department of Agriculture

Gentlemen:

The National Association of Commission Lumber Salesmen congratulate you on your 70th Anniversary.

The longevity of your publication speaks for itself. Only through sound management, fair editorial policy to the lumber industry and ability to maintain trade interests could a publication endure such lapse of time—through periods of wars, depressions, and plenty. You may well be proud of this period of service.

Hubert L. North,
Secretary-Manager

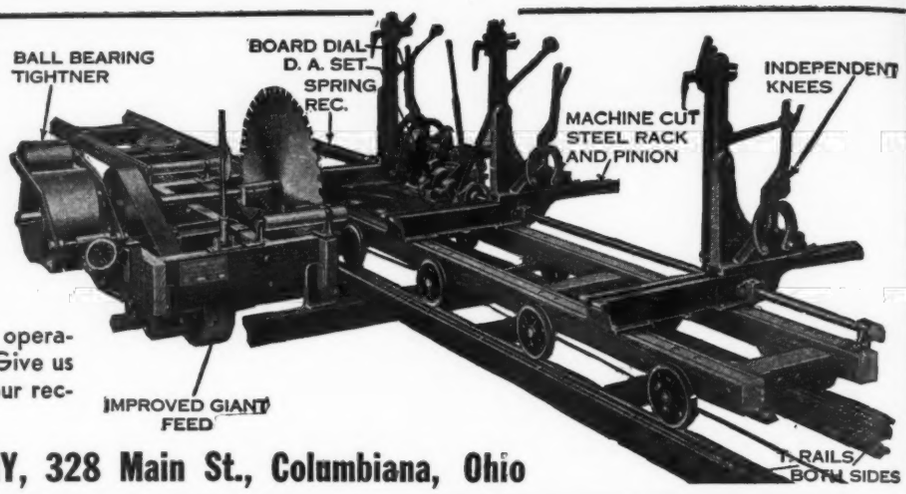
National Association of Commission Lumber Salesmen, Inc.

ENTERPRISE

SAW MILL MACHINERY

NOT DOWN TO A PRICE, but built to tried and proven principles of design and construction for profitable operation.

ENTERPRISE meets the requirements for accuracy and speed of operation with low maintenance cost. Give us details of your requirements for our recommendations and prices.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BOARD DIAL D. A. SET SPRING REC.
INDEPENDENT KNEES
MACHINE CUT STEEL RACK AND PINION
IMPROVED GIANT FEED
I RAILS BOTH SIDES

The ENTERPRISE COMPANY, 328 Main St., Columbiana, Ohio

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NORWAY PINE

Rainy Lake Lumber Co. Ltd.

SALES OFFICE: 1204 CONWAY BLDG. CHICAGO, ILL.

Selling the Products of J. A. Mathieu, Ltd., Rainy Lake, Ont.

We are furnishing

PINE and FIR

for the Army, Navy and other Government uses—and giving best possible service to regular customers on orders carrying ratings under M-208 and L-218. Sales of our famous "John Day" Pine are handled at our Baker, Ore., office. Our "Mount Hood" Douglas Fir is sold through our Dee, Ore., office. We have been satisfying customers for 54 years.

Member Ponderosa Pine Woodwork **Member Western Pine Assn.**

You probably have mills cutting for you that are not producing anywhere near what they could produce if they had a suitable saw. A Simonds F or 2½ saw (both illustrated herewith) would put these mills up to full capacity.

To assist the war effort and for your own interest why not see that these mills get a Simonds F or 2½. Or they could send us their old saw and we will change it into either style in a few days.

The increased output will pay for it in a short time.

J. H. MINER SAW MFG. CO.

MERIDIAN, MISS.

Progress in Lumber Production

(*Continued from page* 84)

1910, self-acting automatic ventilator valves replaced the old style stacks, conserving heat by utilizing the humidity coming from the lumber, and thus reduced checking.

During the first World War many species of both hardwood and softwood were kiln-dried fresh from the saw for the first time successfully. This was due in large measure to the development of the graduated return bend heating system, which provided better gradation of heat and humidity for progressive kiln operation, and greatly increased longitudinal circulation within the kiln. Introduction of the internal fan kiln designed to recirculate the blow air upward into "A" flues stacked into the loads, led to the problem of developing a bearing which would give trouble-free service under exacting kiln conditions. A bearing was developed and adopted widely, with the result that some of them have been operating continuously around the clock for more than 16 years.

Waste space in vertical flue stacking was a problem that commanded attention, and the Moore Dry Kiln Co. found an answer in the patented Moore Reversible Cross-Circulation System, which dries lumber flat, edge to edge. The development was revolutionary in lumber drying processes. Difficulties were overcome by locating all fans on a single shaft, operated by one motor and drive located outside the kiln. It resulted in reduced drying costs, and uniform drying to any pre-determined moisture content.

Kiln drying is a standard part of lumber manufacture in practically every large mill today, and research for improvements in kiln drying methods continues.

Careful use and precise control of relative humidity in kiln drying is necessary to maintain balance between the rate of evaporation at the surface of lumber and the rate of moisture movement from the interior to the surface. Careful humidity control checks the rate of movement of moisture from the surface and aims to prevent checking.

Various chemicals are designed to help speed kiln drying processes by retarding the rate of moisture movement from the lumber surface. Crystal urea, a hydroscopic chemical, is being used to excellent advantage. It is applied by sprinkling it in powder form on lumber piled with the sap sides up. Usually the lumber surface has to be sprinkled with water first. The lumber is solid piled, with attention given to dressing up the ends to prevent the escape of moisture. Urea is applied more heavily at the ends and where the grain is flattest. The need for sprinkling with water as well as the time required for the urea to penetrate to the proper depth depend upon several varying factors. End coats of a paste solution of urea are used. If urea is used to the extent of 40 pounds a thousand feet, at a cost of five cents a pound, the chemical cost is two dollars a thousand.

Relative humidities of the kiln must be adjusted to the moisture retention properties of the chemical applied, whether it is urea, or some other chemical which combines anti-check properties with toxic or fireproof treatment. With treated lumber it is possible to reduce kiln drying time for large sizes of lumber without causing checking.

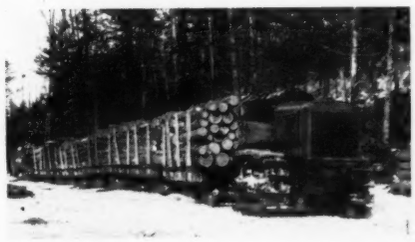
An interesting development is the Moisture Register, now being

Tractor with Willamette drum attachment used to re-log small logs by the "highlead" method

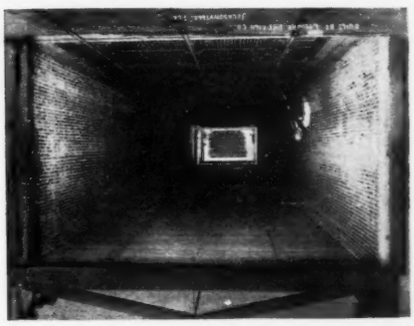
Small independent portable sawmill

Hyster stacker in operation

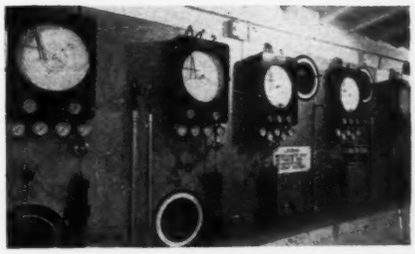
Kiln of the 1900's when two short stacks had replaced the high one previously used



Tractor with special driving wheels for use in pulling sleds loaded with 20 cords of wood



Moist air type kiln used during World War I



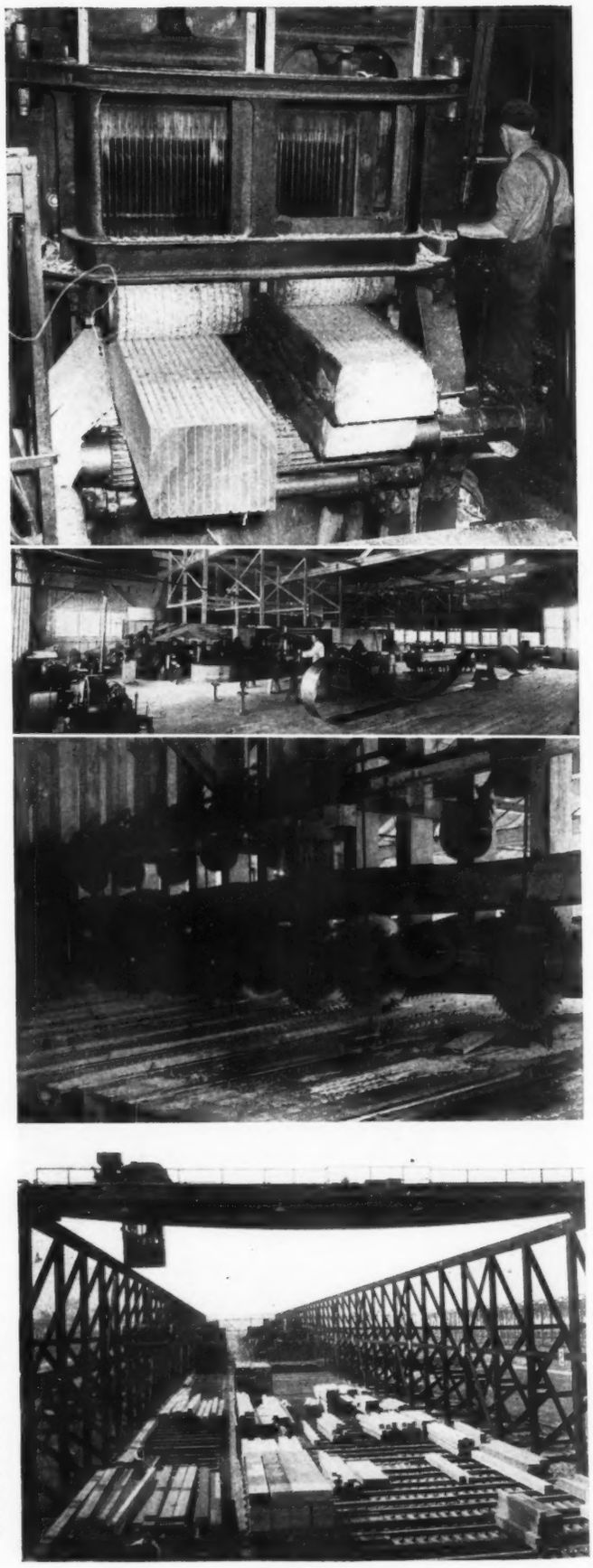
Instrument panel for modern kiln control room

manufactured almost exclusively for war production needs. It is designed to provide a way to test moisture content in lumber quickly, easily and accurately. It includes a direct reading dial and an electrode with a smooth, flat quartered surface to permit best contact with the testing surface, and insure it against injury. One of the first purposes for which Moisture Register was used was in testing moisture content of material used in the manufacture of skis. It is finding the same use in war. With the increasing importance of lumber and plywood in production of planes and ships in the war, demand for Moisture Register exceeds supply. It is expected that it will be made available for civilian industry as soon as the emergency in war production becomes stable.

Many of the innovations in lumber production were criticized in their early stages by non-progressives. One of the critics was reported to have stated ironically at one time that eventually all the efforts for better lumber and forest products might lead to such nonsense as tying lumber up in red ribbons and paper or cellophane wrappers. Perhaps the irony backfired in the form of a constructive suggestion as paper-wrapped trim, cedar bevel siding and packaged flooring did appear.

The period since 1920 has done much to bring about more uniform practices in handling lumber of different species and in different regions. As an example, prior to 1920, most fir manufacturers dressed their dimension on one side and one edge only. This amounted merely to sizing it, and the principal motive was to save freight. They also dressed it green from the saw, and then put it out in the yard to dry. Shrinkage took place after it had been sized, and there was no guaranteed uniformity in size. This applied to boards and shiplap as well as to 2-inch lumber. Pine operators, however, dried the sawn lumber first, then dressed it just prior to shipment.

Now, boards and dimensions generally are surfaced four sides after seasoning, and a large part is normally kiln dried, although in the present emergency there is considerable green lumber shipped. It is safe to predict that when normal conditions are again established builders will be able to buy only boards and dimension that have been surfaced after seasoning.



Top to bottom. Large sash gang saw. Saw filing room, where all band and circular saws are sharpened automatically. 16 saw trimmer used to cut boards to even foot lengths. Facilities designed especially to handle large heavy timbers at the mill

Wholesale Lumber Distributors

By Sid L. Darling, Secretary
National American Wholesale Lumber Association

About twenty years after the establishment of the AMERICAN LUMBERMAN, a small group of men gathered together in a wholesale lumber office located on lower Broadway, in New York City, to correct certain existing abuses in the lumber trade. This group of men firmly believed it was mutually beneficial for wholesalers to gather together once in a while for the purpose of considering ways and means by which business standards could be improved. This informal meeting culminated in the formation of the National Wholesale Lumber Dealers Association, the members of which would pledge themselves to "so conduct themselves as to bring no reproach on this Association." That newly-formed association was then interested in "Efficient Distribution" which was adopted as a motto and which still waves from the masthead of today's National-American.

Other associations of wholesalers were organized in various sections of the country from time to time, but it was realized by the various governing boards that there should be a unity of effort. Accordingly, the Yellow Pine Wholesalers Association of Columbus, Ohio, having merged with the American Wholesale Lumber Association in 1922—an association that was the permanent outgrowth of the National Bureau of Wholesale Lumber Distributors that had organized and incorporated in 1918—merged with the National Wholesale Lumber Dealers Association in March 1923 and adopted the present name—National-American Wholesale Lumber Association.

Shortly after, the Pacific Coast Shippers Association, located at Seattle, Washington, which had started in 1898 and had been reorganized and incorporated in 1908, amalgamated with the National-American Wholesale Lumber Association in January 1924. For a time branch offices were maintained at Chicago, Seattle, Vancouver, B.C. and Minnesota Transfer. Today, with headquarters as originally in New York and a branch office continued at Seattle, Wash. under the able direction of Western Manager Roy Dailey, the National-American has truly a coast-to-coast hook-up.

It is impossible to set forth the many highspots and accomplishments of the Association's life for the past fifty years within the space allotted for this article. It has ably represented the wholesale distributors of forest products at important industry meetings, and wherever contacts with governmental agencies were necessary to insure fair treatment for this branch of the industry it has never failed to advance corrective measures which its leaders considered essential and has vigorously attacked the promulgation of laws, rules and regulations which, in the considered judgment of its leaders, were considered detrimental to the best interests, not only of the wholesalers but of the lumber industry at large. Whenever an intelligently directed cooperative action is needed to consolidate the industry's position and promote its general welfare, the wholesalers of the country have in the main looked to the National-American as the one indispensable agency capable of accomplishing the desired results.

Trade Promotion

The National-American is interested in trade promotion. Over the years it has, through its members and non-members, solicited and collected thousands of dollars to aid the manufacturers in advancing the use of lumber. There are those who say that trade promotion is the exclusive function of the manufacturer—that it is the manufacturer's problem. But it is just as much the lumber wholesaler's problem as it is that of the manufacturer. They both rely exclusively on lumber for their bread and butter.

N. R. A. Activities

During the days of N. R. A.—from the opening of code discussions—the National-American participated. It was the only nationally organized body prepared to take up the cudgels for the wholesaler. It furnished representation on the Lumber Code Authority. It obtained favorable rulings. It opposed and prepared to litigate regulations that affected wholesalers' interests adversely.

Cost Surveys

For the past fifteen years, the National-American has conducted annual surveys covering the cost of distributing direct mill shipments of lumber by wholesalers. This is the only authoritative compilation of wholesale lumber distribution costs. It is of benefit to the industry at large. It has been used as a guide in the establishment of adequate wholesale discounts. It is considered by governmental agencies. It proves conclusively the substantial volume of lumber that is distributed annually by wholesalers.

Walsh-Healey Fight

The arbitrary, unfair and discriminatory definition of a "regular dealer" as contained in the administrative regulations issued by the Secretary of Labor under the so-called Walsh-Healey Government Contracts Bill afforded the National-American an opportunity to demonstrate its worth. Long before the effect of the regulations was felt by wholesalers, the National-American realized the unfairness and sensed difficulty. It realized that the regulations, well-intentioned as they may have been, would "seriously impair the conduct of the Government's business." The fight lasted over two years and ended successfully. Anyone worthy of the name of lumber wholesaler can look with pride to the record produced at public hearings in connection with the fight. When anyone questions the value of the wholesaler and the important part he plays in the economic structure of the industry, he need only be referred to that record. The fight was not conducted by the National-American in the selfish interests of its members. It was conducted on principle. All wholesalers benefited, whether members or non-members . . . and of equal importance, the United States Government benefited.

National Defense

With the success of the Walsh-Healey fight fresh in the minds of those engaged in it, we come at once to the National Defense Program and its enormous requirements for lumber in connection with cantonment construction. This was prior to Pearl Harbor. The wholesalers

The Western Lumber Wholesaler Offers You Valuable Service

AT THE present time friendship, old contacts, good will and personality count more than ever in buying lumber. The Western Wholesaler scurries around daily among the mills, picking up a little here and a little there. He is putting forth his best efforts to serve his customers with Western Softwoods during this wartime period. If the stock you require for your wartime jobs can be obtained, the Western Wholesaler will do his best to supply you.

MAUK SEATTLE LUMBER COMPANY
SEATTLE, WASH.
HOMESTEAD BRAND
WESTERN LUMBER MERCHANTS

CARL SODERBERG LUMBER COMPANY
Manufacturers and Wholesalers
(Sawmill: Pine Products Corp., Prineville, Ore.)
Spokane, Washington

Morrill & Sturgeon Lumber Co.
MORSTURG
The Mark of Quality
Yeon Bldg., Portland, Ore

WALES LUMBER COMPANY
Old National Bank Building
SPOKANE, - - - WASHINGTON

Wendling Nathan Company
110 Market St., SAN FRANCISCO 11, CALIF.

DUNCAN LUMBER COMPANY, INC.
Specialists in Heavy Douglas Fir Clear Cants and Shipdecking.
SEATTLE, WASH.

established an enviable record in the furnishing of lumber during those early stages. Despite the fact that there were those who would exclude the wholesaler from participation in this effort, his value to the Government had already been demonstrated by National-American activities. The wholesaler stepped into the breach and did a job.

Demands for lumber in the war effort, direct and indirect, the latter being no less essential than the former, are many and varied. The sources of the many different species are separated by thousands of miles. These sources are known to comparatively few ultimate users. Thousands of retail yards located in industrial centers, serving essential civilian uses as well as war plants now operating at capacity in the production of war goods of every nature, and thousands of additional yards located in the agricultural areas throughout the country have depended for years upon the wholesaler as their source of supply.

Most industrials have likewise depended upon the wholesaler for aid in obtaining their lumber requirements. Lumber wholesalers have been sought for advice as to the size, grade and species best suited for particular needs and to find the right lumber for the specific purpose required. Experience has demonstrated to these buyers the advantage of dealing with wholesalers who are familiar with their requirements and the sources of supply, rather than the producers who are usually far removed from the place of use and are for the most part without the facilities necessary to render the expert service required.

These industrials and retailers today find it difficult to understand why their customary wholesale sources cannot function as they did in the past and as they now should, and finding themselves unable to complete war contracts without lumber, are pleading with wholesalers to find the material for them. It is precisely in times such as these, when the demand has outstripped the supply of many items, that the long experience of the wholesaler can be utilized by the Government, as well as the industrials serving the Government, to the most telling effect. His expert knowledge and varied qualifications should be made use of now as never before.

Today many lumber wholesalers find the going hard. There are many factors contributing to this situation. Inadequate supply is not the only factor. Much of the difficulty of the lumber wholesaler rests at the door of the Office of Price Administration. Not that it is charged with any lack of understanding of the lumber wholesaler's position in the industry, for the OPA asserts that the price ceilings were fixed with an allowance for the wholesale discount included as a cost factor, but because nothing has been done to assure the wholesaler his just compensation when he buys from the mill, in the form of his usual wholesale discount. While the Administration has repeatedly announced that it "expected the usual wholesale discounts" to be allowed, and the producers were admonished to continue the prevailing wholesaler's margins and other discounts, nevertheless the Administration's efforts to accomplish results by such half-hearted and futile measures have failed and nothing has yet been done (June 26, 1943) by OPA to make an enforceable regulation on the subject.

Complaint is heard of leakage and evasions. The many, however, should not be made to suffer for the violation of a few. Such leakage and evasions can and should be cured.

The Future

What of the future? It has been announced that the lumber cut for the first quarter of this year is about 10% smaller than the corresponding period last year and that the production goal was set at about 32 billion feet for 1943. This is less than the requirements which have been estimated by one in a position to know as close to 35 billion feet. It has also been variously estimated that between 50% and 65% of the lumber produced is distributed through wholesalers. Can any such volume be ignored? Force of circumstances will dictate that the wholesaler's services will be required. Answering those who claim the wholesaler will not survive, I am optimistic enough to feel that he will survive because his elimination would not eliminate the functions he performs. Those functions must be performed by someone and there is no one better equipped by experience and ability than the wholesaler to perform them. The National-American will continue, as it has for over fifty years, its effort to demonstrate this as fact.

OCHOCO LUMBER COMPANY

MANUFACTURERS OF

CENTRAL OREGON PONDEROSA PINE

MILL AND SALES OFFICE

PRINEVILLE, OREGON

HIGH QUALITY - DEPENDABLE - AIR-DRIED - KILN-DRIED

Member Western Pine Association

In MEMPHIS, TENNESSEE

make it

AIR-CONDITIONED

HOTEL PEABODY

Lumbermen's Headquarters

Home of the

SKYWAY

Dining Nightly

and

PLANTATION ROOF

Dancing Nightly

F. R. Schutt:
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Indiana or Iowa or Kalamazoo, Michigan

They All Sound Swell In Africa

Home-town names where good, reliable American products come from.

Yankee ingenuity, among other things, protects wood products against climatic hazards—humidity, heat, cold, salt air. Toxic water repellent preservation of wood is an exclusive American development. The original and standard product is

WOOD LIFE

Protection Products Mfg. Co.

Mfrs. of PRESERVATIVE SOLUTIONS for 21 Years

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Ponderosa Pine
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Shop—Selects—Common
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Prompt, efficient shippers of big mill, excellent quality, rightly-priced Fir, Hemlock, Cedar, Spruce, Red Cedar Shingles, Idaho White Pine, Ponderosa Pine, California Sugar Pine. We strongly subscribe to belief that a SATISFIED CUSTOMER is greatest asset of any institution.

J. G. Kennedy Lumber Co.
Henry Building, SEATTLE

THE FEATHER RIVER LUMBER COMPANY

Manufacturers of

CALIFORNIA SOFT PINE,

WHITE FIR and INCENSE CEDAR

Annual Production 50,000,000 Ft.

LUMBER, BOX SHOOK and MOULDINGS

Mills and Sales Office:
DELLEKER, PLUMAS COUNTY, CALIF.
We are member of Western Pine Association

VEST POCKET READY RECKONER

A useful vest pocket manual including a lumber calculator for standard sizes, log rules, estimated weights of lumber and miscellaneous useful lumber tabulations.

Prepaid, 50 cents

AMERICAN LUMBERMAN, Publisher
431 So. Dearborn St., Chicago

TRADE ASSOCIATIONS

The history of lumber trade associations in both the producing and distributing fields, is one of vast accomplishments, and the AMERICAN LUMBERMAN takes a justifiable pride in having played a leading part in their organization and early development. One of the first moves advocated by the AMERICAN LUMBERMAN in the early seventies was that the industry organize in order to improve operation methods, protect its status; and combat the adverse effects of competition within the industry which was being carried on without specific rules and regulations. The AMERICAN LUMBERMAN has been a staunch advocate and supporter of all association movements since its beginning; its files contain numerous evidences of initiative and leadership in that field. The magnitude and scope of associations and their benefits reach into every phase of the lumber business so that to enumerate the profit and benefit of membership in these organizations is impossible. As the lumber industry became specialized, associations to serve the various branches and species were formed to protect the interests of their respective constituents.

The development of the railroads and their knitting together of the country into closer and quicker contact and the better methods of production that were steadily being fostered, brought about a competition which threatened the local security of dealers. It was this crisis, brought about by the panic following the Civil War, that taught lumbermen the wisdom of co-operation and understanding, and brought about the first association of importance among retail lumber dealers—the National Association of Lumber Dealers, organized in Iowa in 1876 by retailers from Illinois, Iowa, Kansas, and Missouri, and enrolling members from as far distant as New England. This first lumber association was dissolved in 1888, but its dissolution was promptly followed by the organization of separate associations in the Mississippi Valley.

The Missouri & Kansas Retailers' Association, organized in 1888, was the predecessor of the present Southwestern Lumbermen's Association of Kansas City, Mo. The name was changed in 1903. The Northwestern Lumbermen's Association was organized in 1890, and the Western Retail Lumbermen's Association was established as the Inland Empire Retail Lumbermen's Association in 1903, changing its name to the present one the following year. However, the New Jersey Lumbermen's Association lays claim to the distinction of being the oldest retail lumber dealer's trade association in the United States, having been organized as the New Jersey Lumbermen's Protective Association in 1885 and having changed its name to the present one in 1915.

However, local lumber trade organizations are apparently older than State or regional associations. The Cleveland Board of Lumber Dealers was organized in 1866. For many years after the Civil War, Chicago was the leading lumber center of the United States, and so it was entirely fitting that the Lumbermen's Association of Chicago should have been formed there in 1869—seventy-four years ago. After its fifty-eighth annual meeting in 1927, the old Lumbermen's Association of Chicago, which had been composed of all the various branches of the industry, was taken over by the Chicago Retail Lumber Dealers' Association and a new organization, the Lumbermen's Club of Chicago, succeeded the Lumbermen's Association of Chicago. In 1939 the Chicago Retail Lumber Dealers' Association was succeeded by the present functioning body — the Lumber Trade Association of Cook County, of which J. L. Strong, who has been in the lumber business for fifty-seven years, has been the guiding spirit for thirty years.

In its present structure, the lumber industry in its various branches in the United States, is represented by four main national associations—the National Lumber Manufacturers' Association, the National Retail Lumber Dealers' Association, the National-Ameri-

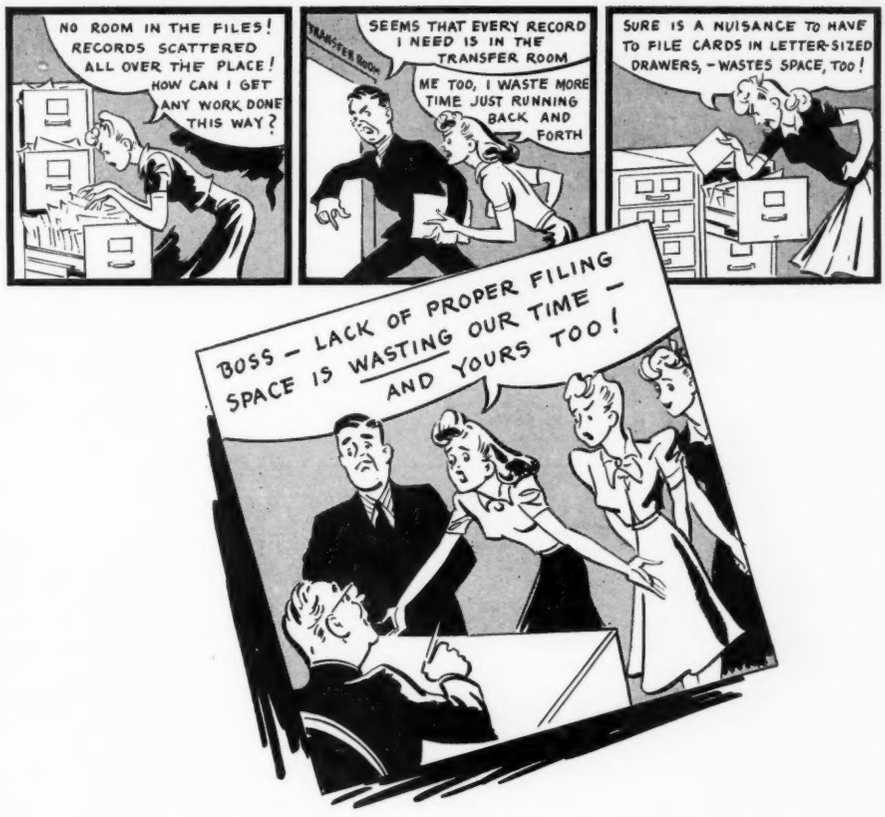
can Wholesale Lumber Association, and the National Association of Commission Lumber Salesmen—besides many regional and "species" associations.

The National Lumber Manufacturers' Association was formed in 1902, and its present secretary, Dr. Wilson Compton, was appointed to that office in September, 1918. Fourteen federated regional lumber manufacturing associations form this spokesman for the lumber manufacturers, which maintains a large staff of experts in the various departments of its organization and has headquarters in Washington, D. C. In this way each individual member has alert representation in the nation's capital to look after his welfare, and the industry operates as a unit without conflicting objectives. American Forest Products Industries and Timber Engineering Co. are subsidiaries of the NLMA, each having its own executive administrations.

In order to co-ordinate the efforts of the retailers' regional associations which were established in the eighteen eighties and eighteen nineties, the United Association of Lumbermen, composed of officers of affiliated regional associations, was organized in 1890. This effort proved inadequate and in 1896 it was succeeded by the Lumber Secretaries Association, which was incorporated in 1902 as the Lumber Secretaries Bureau of Information.

But the nucleus of the present National Retail Lumber Dealer's Association, whose headquarters are in Washington, D. C., and whose present secretary is H. R. Northup, was formed in 1916 to combat trade abuses after the late Edward Hines had had his attention directed to the important marketing problems in the lumber industry at a meeting of the World's Salesmanship Congress in Detroit, which he attended. As a result, the National Retail Lumber Dealers' Association was organized to bring about the co-ordination of sales efforts and effective co-operation between manufacturer and retail dealer, and more equitable lumber distribution. A declaration of business ethics and business methods was made. A re-organization of the association was effected in 1932, at which time a program was adopted to co-ordinate and make more effective the functions of the local, State, and regional associations of retail lumber dealers; to encourage the efficient and economic distribu-

(*Continued to page* 232)


NO ROOM IN THE FILES! RECORDS SCATTERED ALL OVER THE PLACE! HOW CAN I GET ANY WORK DONE THIS WAY?
SEEMS THAT EVERY RECORD I NEED IS IN THE TRANSFER ROOM
ME TOO, I WASTE MORE TIME JUST RUNNING BACK AND FORTH
SURE IS A NUISANCE TO HAVE TO FILE CARDS IN LETTER-SIZED DRAWERS, - WASTES SPACE, TOO!
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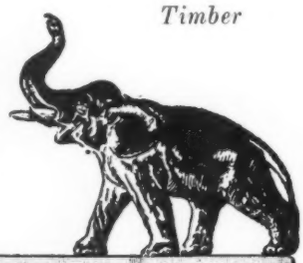

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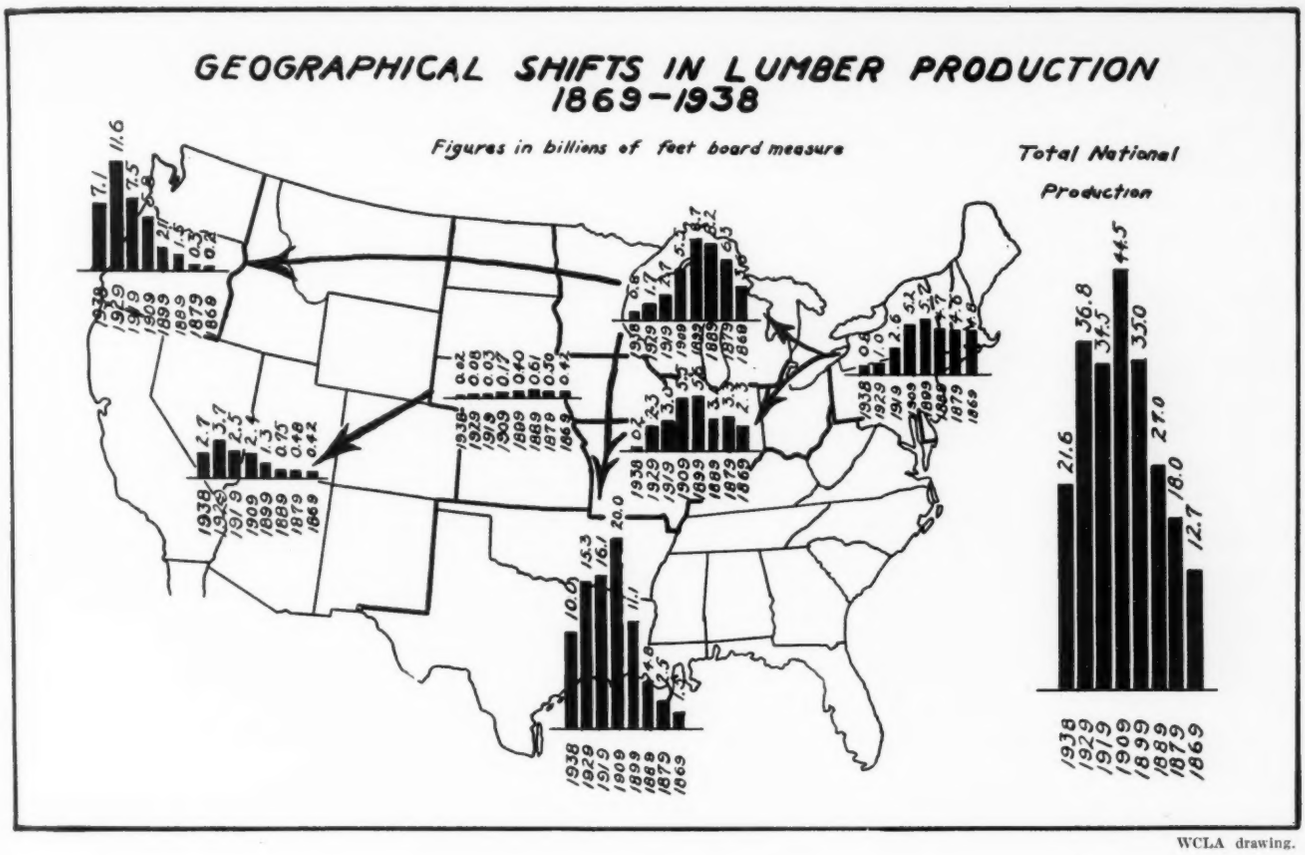

WCLA drawing.

Guide to Lumber Species

Northeastern Region

Origin and Development of Industry:

Facts concerning the date and place of the first sawmill in this region are somewhat clouded in counter-claims, but it was indeed the first in America. A writer in an early issue of the *North American Review* cites Agamentico (the ancient name for the city of York, Maine), as the place, and 1623 as the date. Bolles' *Industrial History of the United States* found evidence that caused it to claim that the first sawmill was erected near the present city of Portsmouth, N. H., in 1631 and John E. Hobbs (and the Northeastern Lumber Manufacturers Assn.) feel that the "business of lumbering had its beginning in the town of Berwick, Maine, for in that town was erected in 1631 the first sawmill in the New World . . . also the second in 1634, and here also, in 1650, was built the first gang sawmill in this continent, if not in the world."

From 1631 until about 1860 the Northeast led the nation in lumber production. Many of the names now prominent in the lumber industry in the West and South are identified with those families that started the lumber industry in the Northeastern states.

Species, their properties and uses:

EASTERN SPRUCE (*Picea rubra, Picea glauca, Picea Mariana*)

Eastern spruce includes three species: red, white, and black spruce (botanical names given in same order). No distinction is made between them because their properties are about the same. Chief characteristic of the wood is its long fibers which make it desirable for transmission of sound in sounding boards of musical instruments and for structural purposes and scaffolding and general millwork. It is of uniform texture, free from pitch and easy to work. It dries easily and holds paint well.

NORTHERN WHITE PINE (*Pinus strobus*)

Lighter in color and weight and more free from resin than other pines, Northern white pine is durable, straight grained, soft-textured, easy to work and glues well. It stays in place with a minimum of warpage. It occupies an intermediate position in nail holding ability.

YELLOW BIRCH (*Betula lutea*)

Most of the birch used for flooring is yellow birch. It is fine, even textured, hard, strong and takes a high polish. Natural finish is attractive. It is light in color, takes enamel well, and much of it goes into cabinet work.

WHITE BIRCH

The sapwood of sweet birch and yellow birch is known as white birch. Much of the Eastern white birch is used within the Northeast for dowels, skewers, tongue depressors and other uses for which it is particularly well adapted.

BEECH (*Fagus americana*)

Red beech and white beech designates respectively

between heartwood and sapwood of the tree. The species is hard, heavy and strong and can be worked rather well. It has considerable shock resistance and good resistance to abrasion. It is difficult to dry, but once dry it stays in place well and has excellent nail holding ability. It can be given a smooth, hard finish. Northeastern beech is used largely for brush backs and handles and other woodenware.

HARD MAPLE (Acer saccharum)

Also a strong, heavy, hard, fine grained and fine textured wood. Has greater density and finer texture than soft maples. It is comparatively easy to work, difficult to dry, holds its position well, and takes a fine polish. Much of the Northeastern maple goes into cabinet work.

Outlook for the Future:

When the original lumbermen left the Kennebec, Saco, Androscoggin, Connecticut and Hudson river valleys they thought that the timber was gone from this region. Many remained however in the original locations and there are numerous operations in the Northeast today which have been carried on continuously for more than 100 years.

The Northeast is the area of greatest lumber consumption now, and although it cannot produce its total lumber requirements the industry is very active and there is no reason why it should not continue so. The fact that it has been operating continuously for so many years indicates that these lumbermen know how to handle their woods. According to Government statistics the Northeast is the only region in the country that does not normally cut its annual growth.

Appalachian Region

Species, their properties and uses:

APPALACHIAN BEECH (Fagus atropunicea)

Appalachian Beech is a hard, strong, diffused porous wood, with uniform texture and delicate grain pattern. It seasons and machines well, and takes a lustrous polish. It has excellent shock resisting ability and nail and screw holding properties. It is somewhat subject to shrinkage. It glues comparatively well. More than one-fourth of all Beech produced normally goes into furniture production. It is also used for flooring inasmuch as it does not splinter or sliver easily, and some goes into box and crate manufacture. Woodenware and handles take a large quantity because of its turning and working ability.

APPALACHIAN BIRCH (Betula lenta)

Because of favorable growing conditions in this region the Appalachian birch reaches maximum width, length and proportion of heartwood. It has great natural beauty and a practically mar proof hardness, and it is suited to taking a natural color finish as well as stain or enamel. It is widely used for decorative paneling, flooring, (hardness exceeded only by that of maple) and for furniture, caskets, and other uses. Much of the fine red birch is cut into veneer.

APPALACHIAN HARD MAPLE (Acer saccharum)

This hard maple or sugar maple is strong and hard, but easily seasoned and worked. It takes stain readily and may be successfully painted. It has medium shrinkage and stays in place well, and has very good nail and screw holding ability. It is extensively used for furniture and flooring as it has exceptional resistance to abrasion. Much of it goes into industrial purposes; in the boot and shoe industry as heels, and into the textile industry as shuttles, spools and bobbins. Sporting goods, toys and woodenware are also made of this maple. One-fourth of production goes into boxes and crates.

APPALACHIAN CHERRY (Prunus Pennsylvanica)

Cherry is particularly suited to the manufacture of furniture and woodwork because of its very fine, uniform texture, and delicate grain patterns, its exceptional strength (considering its weight), its workability and its hardness. It resists swelling, shrinking and warping to a high degree. It takes and holds glue and nails exceptionally well. Because of its ability to stay in place it has been widely used as a base block for printing plates. Much of the rest of it goes into fine cabinet work, furniture, scientific instruments and doors and paneling.

APPALACHIAN CHESTNUT (Castanea dentata)

Outstanding characteristic of chestnut is its ability to resist shrinking and expansion, and to stay in place after being properly seasoned. The wood is moderately strong and light in weight, seasons and works readily, nails easily, glues exceptionally well and is durable. Because of these qualities it is widely used for core wood in plywood. It is used for interior paneling, (as it has a distinctive grain) and for half-timbering. Care must be taken to oil the timbers before use or rain water will cause them to leach out and stain stucco or stone work. Natural or stain finish complements this wood.

The Appalachian Region.

APPALACHIAN YELLOW POPLAR (Liriodendron tulipifera)

The exceptional paintability of this wood has caused it to be widely used for fine painted or enameled woodwork. In addition it is easily seasoned and surfaced and worked into desired shapes with smooth surfaces and edges. It has the ability to retain its shape after having been worked. It is easily glued. It nails without splitting due to its moderate softness and uniformity of texture. There is no resin to bleed through paint. It is moderately strong and elastic and light in weight. The heartwood is greenish yellow and sapwood is white and somewhat less durable than the heartwood.

APPALACHIAN BASSWOOD (Tilia heterophylla)

Appalachian basswood is almost white in color, has a straight grain and a fine uniform texture. It is of light weight, of medium strength and comparatively free from excessive shrinkage, warping and splitting when thoroughly kiln dried. It works easily, sands smoothly and glues well. It holds paint well. It is not as hard as yellow poplar and is used widely as a medium priced interior woodwork material.

APPALACHIAN OAK (predominantly Quercus alba)

Certain climate and soil conditions in the Appalachian Region are said to impart to oak grown there exceptional seasoning and working properties. Cores in red oak tend to be more open than in white oak and if smoke can be blown through an 8 inch piece, it is more liable to be red oak than white oak. The species provides a number of different grain ef-

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The company's timber is operated under sustained yield forest management. This means growing as well as harvesting the timber crop. We will be able to supply you not only next year but 25 or 50 years hence, from ever replenishing timber stands in Oregon, California and Pennsylvania.

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COLLINS PINE COMPANY

Pondosa, Ore. **Chester, Cal.**

fects, depending on its sawing. It may be plane sawn, rift sawn, or quarter sawn. The Appalachian variety is said to be of slower growth with closer rings and thus finer grain. Its uses are similar to those described for Southern oak.

Outlook for the Future:

The Appalachian region is generally recognized as being climatically favorable to forest growth, particularly of the hardwood species. Many hardwoods cut from this region are cited as being top quality of their species and bring higher prices on the lumber market. Forest growth is abundant through the region and because of favorable growing conditions reforestation practices meet with considerable success. The Appalachian section promises to continue to be

(*Continued on page* 209)

Strength properties of some commercially important woods grown in the United States

[Results of tests on small,[1] clear specimens in the green and air-dry condition [2]]

Commercial and botanical name of species	Moisture content	Specific[3] gravity	Static bending: Fiber stress at proportional limit	Static bending: Modulus of—Rupture	Static bending: Modulus of—Elasticity	Static bending: Work to—Proportional limit	Static bending: Work to—Maximum load	Impact bending: Fiber stress at proportional limit	Impact bending: Height of drop causing complete failure (50-pound hammer)	Compression parallel to grain: Fiber stress at proportional limit	Compression parallel to grain: Maximum crushing strength	Compression perpendicular to grain—fiber stress at proportional limit	Shear parallel to grain—maximum shearing strength	Hardness: Load required to embed a 0.444-inch ball to ½ its diameter—End	Hardness: Load required to embed a 0.444-inch ball to ½ its diameter—Side
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
	Percent		*Lb. per sq. in.*	*Lb. per sq. in.*	*1,000 lb. per sq. in.*	*In.-lb. per cu. in*	*In.-lb. per cu. in.*	*Lb. per sq. in.*	*Inches*	*Lb. per sq. in.*	*Lb. per sq. in.*	*Lb. per sq. in.*	*Lb. per sq. in.*	*Lb.*	*Lb.*
Alder, red (*Alnus rubra*)	98	0.37	3,800	6,500	1,170	0.70	8.0	8,000	22	2,620	2,960	310	770	550	440
	12	.41	6,900	9,800	1,380	1.85	8.4	11,600	20	4,530	5,820	540	1,080	980	590
Ash, black (*Fraxinus nigra*)	85	.45	2,600	6,000	1,040	.41	12.1		33	1,690	2,300	430	860	590	
	12	.49	7,200	12,600	1,600	1.57	14.9		35	4,520	5,970	940	1,570	1,150	
Ash, commercial white [4] (*Fraxinus* sp.)	43	.54	5,300	9,500	1,400	1.14	14.7	12,800	37	3,360	4,060	860	1,350	1,010	940
	12	.58	8,900	14,600	1,680	2.68	15.6	17,000	40	5,580	7,280	1,510	1,920	1,680	1,260
Ash, Oregon (*Fraxinus oregona*)	48	.50	4,200	7,600	1,130	.92	12.2	8,900	39	2,760	3,510	650	1,190	850	790
	12	.55	7,000	12,700	1,360	2.08	14.4	13,300	33	4,100	6,040	1,540	1,790	1,430	1,160
Aspen (*Populus tremuloides*)	94	.35	3,200	5,100	860	.69	6.4	7,000	22	1,670	2,140	220	660	280	300
	12	.38	5,600	8,400	1,180	1.53	7.6	9,000	21	3,040	4,250	460	850	510	350
Basswood (*Tilia glabra*)	105	.32	2,700	5,000	1,040	.40	5.3	6,300	16	1,690	2,220	210	600	290	250
	12	.37	5,900	8,700	1,460	1.37	7.2	9,800	16	3,800	4,730	450	990	520	410
Beech (*Fagus grandifolia*)	54	.56	4,300	8,600	1,380	.85	11.9	11,500	43	2,550	3,550	670	1,290	970	850
	12	.64	8,700	14,900	1,720	2.63	15.1	16,000	41	4,880	7,300	1,250	2,010	1,590	1,300
Birch [5] (*Betula* sp.)	62	.57	4,400	8,700	1,560	.79	15.9	11,100	48	2,640	3,510	550	1,160	910	850
	12	.63	10,100	16,700	2,070	2.83	19.8	20,000	52	6,200	8,310	1,250	2,020	1,660	1,340
Birch, paper (*Betula papyrifera*)	65	.48	3,000	6,400	1,170	.45	16.2	8,000	49	1,640	2,360	340	840	470	560
	12	.55	6,900	12,300	1,590	1.80	16.0	12,400	34	3,610	5,690	740	1,210	890	910
Butternut (*Juglans cinerea*)	104	.36	2,900	5,400	970	.52	8.2	7,300	24	2,020	2,420	270	760	410	390
	12	.38	5,700	8,100	1,180	1.59	8.2	11,200	24	4,200	5,110	570	1,170	570	490
Cedar, Alaska (*Chamaecyparis nootkatensis*)	38	.42	3,800	6,400	1,140	.77	9.2	9,100	27	2,500	3,050	430	840	540	440
	12	.44	7,100	11,100	1,420	2.06	10.4	12,200	29	5,210	6,310	770	1,130	790	580
Cedar, eastern red (*Juniperus virginiana*)	35	.44	3,400	7,000	650	1.08	15.0	7,000	35	2,540	3,570	860	1,010	760	650
	12	.47	3,800	8,800	880	1.01	8.3	8,500	22		6,020	1,140		900	
Cedar, incense (*Libocedrus decurrens*)	108	.35	3,900	6,200	840	.94	6.4	7,300	17	2,940	3,150	460	830	570	390
	12		5,900	8,000	1,040	1.67	5.4	9,600	17	4,760	5,200	730	880	830	470
Cedar, northern white (*Thuja occidentalis*)	55	.29	2,600	4,200	640	.60	5.4	5,300	15	1,490	1,990	290	620	320	230
	12	.31	4,900	6,500	800	1.72	4.8	7,100	12	2,630	3,960	380	850	450	320
Cedar, Port Orford (*Chamaecyparis lawsoniana*)	43	.40	4,000	6,200	1,420	.65	7.4	9,200	22	2,770	3,130	350	830	460	400
	12	.42	7,700	11,300	1,730	1.97	9.1	13,500	28	5,890	6,470	760	1,080	730	560
Cedar, southern white (*Chamaecyparis thyoides*)	35	.31	2,500	4,700	750	.51	5.9	6,000	18	1,660	2,390	300	690	400	290
	12	.32	4,800	6,800	930	1.46	4.1	7,600	13	2,740	4,700	500	800	520	350
Cedar, western red (*Thuja plicata*)	37	.31	3,200	5,100	920	.63	5.0	6,900	17	2,470	2,750	340	710	430	270
	12	.33	5,300	7,700	1,120	1.44	5.8	8,600	17	4,360	5,020	610	860	660	350
Cherry, black (*Prunus serotina*)	55	.47	4,200	8,000	1,310	.80	12.8	10,200	33	2,940	3,540	440	1,130	750	660
	12	.50	9,000	12,300	1,490	3.11	11.4	13,600	29	5,960	7,110	850	1,700	1,470	950
Chestnut (*Castanea dentata*)	122	.40	3,100	5,600	930	.59	7.0	7,900	24	2,080	2,470	380	800	530	420
	12	.43	6,100	8,600	1,220	1.78	6.5	10,700	19	3,780	5,320	760	1,080	720	540
Cottonwood, eastern (*Populus deltoides*)	111	.37	2,900	5,300	1,010	.49	7.3	7,200	21	1,740	2,280	240	680	380	340
	12	.40	5,700	8,500	1,370	1.39	7.4	7,300	20	3,490	4,910	470	930	580	430
Cottonwood, northern black (*Populus trichocarpa hastata*)	132	.32	2,900	4,800	1,070	.44	5.0	6,800	20	1,760	2,160	200	600	280	250
	12	.35	5,300	8,300	1,200	1.25	6.7	9,800	22	3,270	4,420	370	1,020	540	350
Cypress, southern (*Taxodium distichum*)	91	.42	4,200	6,600	1,180	.91	6.6	8,800	25	3,100	3,580	500	810	440	390
	12	.46	7,200	10,600	1,440	2.15	8.2	10,400	24	4,740	6,360	900	1,000	660	510
Douglas fir (coast region) (*Pseudotsuga taxifolia*)	36	.45	4,800	7,600	1,550	.85	6.8	9,800	24	3,410	3,890	510	930	510	480
	12	.48	8,100	11,700	1,920	1.96	8.6	12,700	30	6,450	7,420	910	1,140	760	670
Douglas fir ("Inland Empire" region) (*Pseudotsuga taxifolia*)	42	.41	3,600	6,800	1,340	.55	6.9	8,700	22	2,460	3,240	500	870	530	470
	12	.44	7,400	11,300	1,610	1.91	8.6	11,800	27	5,520	6,700	950	1,190	720	630
Douglas fir (Rocky Mountain region) (*Pseudotsuga taxifolia*)	28	.40	3,600	6,400	1,180	.65	6.8	9,100	20	2,540	3,000	450	880	450	400
	12	.43	6,300	9,600	1,400	1.60	6.4	12,100	26	4,660	6,060	820	1,070	740	630
Elm, American (*Ulmus americana*)	89	.46	3,100	7,200	1,110	.81	11.8		38	1,920	2,910	440	1,000	680	
	12	.50	7,000	11,800	1,340	2.53	13.0		39	4,030	5,520	850	1,510	1,110	
Elm, rock (*Ulmus racemosa*)	48	.57	4,000	9,500	1,190	1.05	19.8		54	2,970	3,780	750	1,270	980	
	12	.63	8,000	14,800	1,540	2.45	19.2		56	4,700	7,050	1,520	1,920	1,510	
Elm, slippery (*Ulmus fulva*)	85	.48	4,000	8,000	1,230	.82	15.4	9,200	47	2,790	3,320	510	1,110	750	660
	12	.53	7,700	13,000	1,490	2.35	16.9	15,300	45	4,760	6,360	1,010	1,630	1,120	860
Fir, balsam (*Abies balsamea*)	117	.34	3,000	4,900	960	.52	4.7	6,900	16	2,080	2,400	210	610	290	290
	12	.36	5,200	7,600	1,230	1.23	5.1	7,800	20	3,970	4,530	380	710	510	400
Fir, commercial white [6] (*Abies* sp.)	108	.36	3,800	5,800	1,120	.75	5.3	8,300	22	2,470	2,810	360	750	390	340
	12	.38	6,300	9,300	1,470	1.55	7.0	11,200	20	3,870	5,380	610	930	710	460
Gum, black (*Nyssa sylvatica*)	55	.46	4,000	7,000	1,030	.91	8.0	9,800	30	2,490	3,040	600	1,100	790	640
	12	.50	7,300	9,600	1,200	2.54	6.2	14,500	22	3,470	5,520	1,150	1,340	1,240	810
Gum, red (*Liquidambar styraciflua*)	81	.44	3,700	6,800	1,150	.81	9.4	10,000	33	2,230	2,840	460	1,070	630	520
	12	.49	8,100	11,900	1,490	2.57	11.3	16,800	32	4,700	5,800	860	1,610	950	690
Gum, tupelo (*Nyssa aquatica*)	97	.46	4,200	7,300	1,050	.98	8.3	9,000	30	2,690	3,370	590	1,190	800	710
	12	.50	7,200	9,600	1,260	2.41	6.9	12,500	23	4,280	5,920	1,070	1,590	1,200	880
Hackberry (*Celtis occidentalis*)	65	.49	2,900	6,500	950	.68	14.5	7,900	48	2,070	2,620	490	1,070	760	700
	12	.53	5,900	11,000	1,190	1.72	12.8	13,700	43	3,710	5,440	1,100	1,590	1,110	880
Hemlock, eastern (*Tsuga canadensis*)	111	.38	3,800	6,400	1,070	.76	6.7	7,900	21	2,600	3,080	440	850	500	400
	12	.40	6,100	8,900	1,200	1.79	6.8	10,700	21	4,020	5,410	800	1,060	810	500

[1] Test specimens 2 by 2 inches in section. Bending specimens 30 inches long; others shorter depending on kind of test.
[2] The values in the first line for each species are from tests of green material; those in the second line are from tests of seasoned material adjusted to an average air dry condition of 12 percent moisture.
[3] Based on weight when oven dry and volume when green or at 12-percent moisture content.
[4] Average of Biltmore white ash (*Fraxinus biltmoreana*), blue ash (*F. quadrangulata*), green ash (*F. pennsylvanica lanceolata*), and white ash (*F. americana*).
[5] Average of sweet birch (*Betula lenta*) and yellow birch (*B. lutea*).
[6] Average of lowland white fir (*Abies grandis*) and white fir (*A. concolor*).

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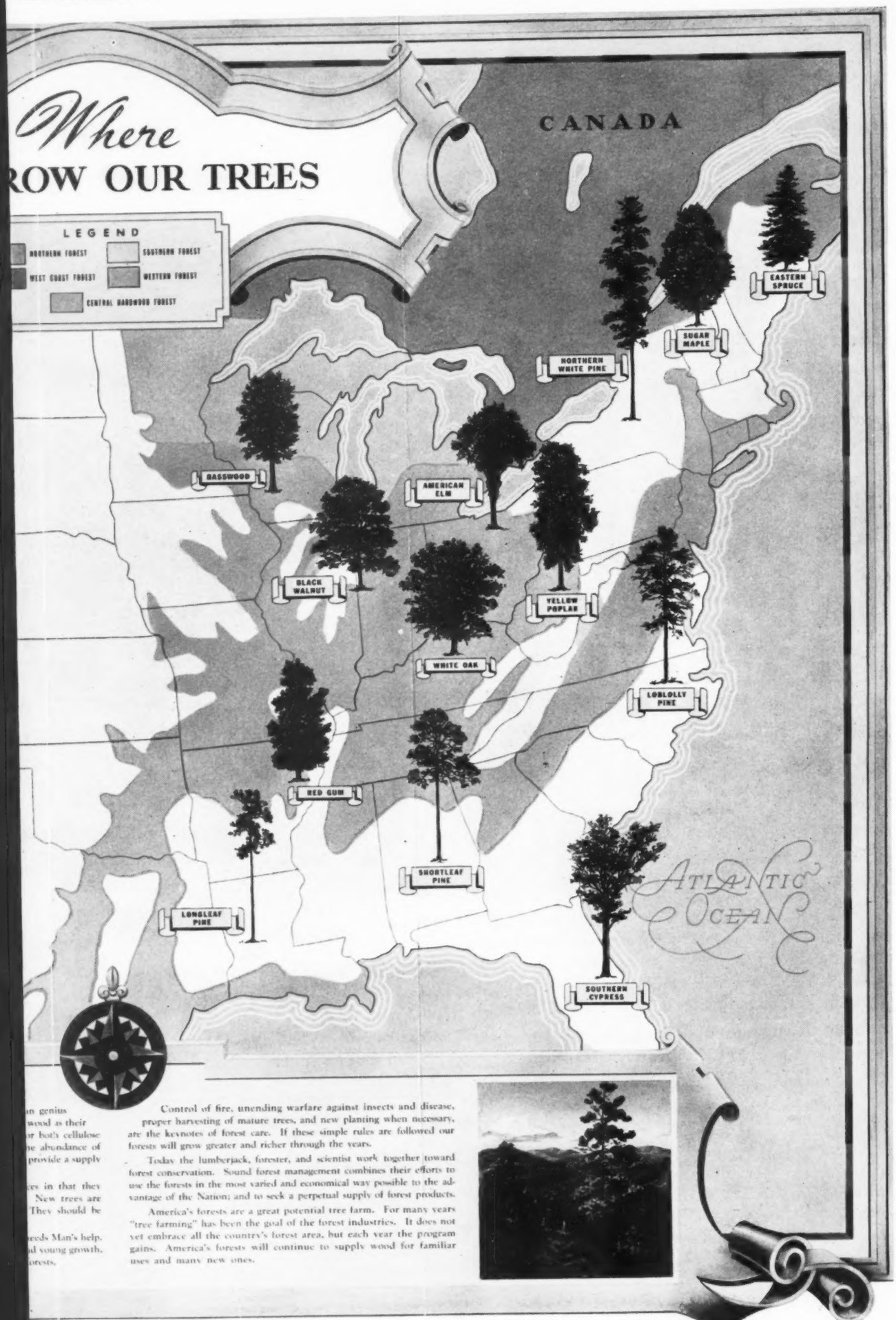

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Control of fire, unending warfare against insects and disease, proper harvesting of mature trees, and new planting when necessary, are the keynotes of forest care. If these simple rules are followed our forests will grow greater and richer through the years.

Today the lumberjack, forester, and scientist work together toward forest conservation. Sound forest management combines their efforts to use the forests in the most varied and economical way possible to the advantage of the Nation; and to seek a perpetual supply of forest products.

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a source of lumber products for many, many years to come.

Northern & Lake State Region

Origin and Development of the Industry:

It was almost two centuries after the first American sawmill was established in Jamestown in the early 1600's that commercial lumbering began on the tributaries of the upper Mississippi River near Black River Falls, and the first sawmill built in Wisconsin was established there in 1819. A resident of Prairie du Chien owned and operated that mill (according to Wisconsin Historical Society records).

The early pine timber area of Wisconsin was divided as follows: The basins of the St. Croix, Chippewa, Black Wolf, Oconto, Peshtigo and Menominee rivers, with their tributaries; and the basins south of the shore of Lake Superior. It is reported that the greatest volume of pine timber was in the Chippewa basin. In all probability the timber in the basin of the Black River was the most accessible and that no

Commercial and botanical name of species	Moisture content	Specific gravity	Static bending					Impact bending		Compression parallel to grain		Compression perpendicular to grain—fiber stress at proportional limit	Shear parallel to grain—maximum shearing strength	Hardness	
			Fiber stress at proportional limit	Modulus of—		Work to—		Fiber stress at proportional limit	Height of drop causing complete failure (50-pound hammer)	Fiber stress at proportional limit	Maximum crushing strength			Load required to embed a 0.444-inch ball to ½ its diameter	
				Rupture	Elasticity	Proportional limit	Maximum load							End	Side
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
	Percent		*Lb. per sq. in.*	*Lb. per sq. in.*	*1,000 lb. per sq. in.*	*In.-lb. per cu. in.*	*In.-lb. per cu. in.*	*Lb. per sq. in.*	*Inches*	*Lb. per sq. in.*	*Lb. per sq. in.*	*Lb. per sq. in.*	*Lb. per sq. in.*	*Lb.*	*Lb.*
Hemlock, western (*Tsuga heterophylla*)	74	.38	3,400	6,100	1,220	.57	6.8	8,100	22	2,480	2,990	390	810	520	430
	12	.42	6,800	10,100	1,490	1.82	7.5	12,400	26	5,340	6,210	680	1,170	940	580
Hickory, pecan [7] (*Hicoria* sp.)	68	.59	5,300	9,900	1,380	1.18	19.3	14,200	60	3,810	4,320	980	1,260	1,274	1,308
	12	.65	9,100	16,300	1,780	2.61	18.8	20,900	57	6,360	8,280	2,040	1,770	1,930	1,820
Hickory, true [8] (*Hicoria* sp.)	57	.65	6,100	11,300	1,570	1.34	28.9	15,700	88	3,650	4,570	1,080	1,360	------	------
	12	.73	10,900	19,700	2,180	3.07	27.2	22,900	75	------	8,970	2,310	2,140	------	------
Honey locust (*Gleditsia triacanthos*)	63	.60	5,600	10,200	1,290	1.40	12.6	11,800	47	3,320	4,420	1,420	1,660	1,440	1,390
	12	------	8,800	14,700	1,630	2.74	13.3	15,400	47	5,250	7,500	2,280	2,250	1,860	1,580
Larch, western (*Larix occidentalis*)	58	.48	4,600	7,500	1,350	1.01	7.1	9,400	24	3,250	3,800	560	920	470	450
	12	.52	7,900	11,900	1,710	2.46	8.0	15,100	32	5,950	7,490	1,080	1,360	1,110	760
Locust, black (*Robinia pseudoacacia*)	40	.66	8,800	13,800	1,850	2.36	15.4	18,300	44	6,120	6,800	1,430	1,760	1,640	1,570
	12	.69	12,800	19,400	2,050	4.62	18.4	21,100	57	6,800	10,180	2,260	2,480	1,580	1,700
Magnolia, cucumber (*Magnolia acuminata*)	80	.44	4,200	7,400	1,560	.66	10.0	9,300	30	2,810	3,140	410	990	600	520
	12	.48	8,000	12,300	1,820	1.98	12.2	14,700	35	4,840	6,310	710	1,340	950	700
Magnolia, evergreen (*Magnolia grandiflora*)	105	.46	3,600	6,800	1,110	.67	15.4	8,800	54	2,160	2,700	570	1,040	780	740
	12	.50	6,800	11,200	1,400	1.90	12.8	13,600	29	3,420	5,460	1,060	1,530	1,280	1,020
Maple, bigleaf (*Acer macrophyllum*)	72	.44	4,400	7,400	1,100	1.02	8.7	8,500	23	2,510	3,240	550	1,110	760	620
	12	.48	6,600	10,700	1,430	1.66	7.8	------	28	4,790	5,950	930	1,730	1,330	850
Maple, black (*Acer nigrum*)	65	.52	4,100	7,900	1,330	.70	12.8	10,200	48	2,800	3,270	740	1,130	940	840
	12	.57	8,300	13,300	1,620	2.39	12.5	13,500	40	4,600	6,680	1,250	1,820	1,700	1,180
Maple, red (*Acer rubrum*)	63	.49	3,800	7,700	1,390	.71	11.4	------	32	2,360	3,280	500	1,150	780	------
	12	.54	8,700	13,400	1,640	2.84	12.5	------	32	4,650	6,540	1,240	1,850	1,430	------
Maple, silver (*Acer saccharinum*)	66	.44	3,100	5,800	940	.61	11.0	6,800	29	1,920	2,490	460	1,050	670	590
	12	.47	6,200	8,900	1,140	1.90	8.3	12,400	25	4,360	5,220	910	1,480	1,140	700
Maple, sugar (*Acer saccharum*)	58	.56	5,100	9,400	1,550	1.03	13.3	12,200	40	2,850	4,020	800	1,460	1,070	970
	12	.63	9,500	15,800	1,830	2.76	16.5	20,600	39	5,390	7,830	1,810	2,330	1,840	1,450
Oak, red [9] (*Quercus* sp.)	80	.57	4,400	8,300	1,360	.85	12.6	10,800	43	2,590	3,520	800	1,220	1,050	1,030
	12	.63	8,400	14,400	1,810	2.30	15.0	17,000	43	4,610	6,920	1,260	1,830	1,490	1,300
Oak, white [10] (*Quercus* sp.)	70	.59	4,700	8,100	1,200	1.08	11.3	10,900	42	2,940	3,520	850	1,270	1,110	1,070
	12	.67	7,900	13,900	1,620	2.31	13.3	17,400	39	4,350	7,040	1,410	1,890	1,420	1,330
Pine, lodgepole (*Pinus contorta*)	65	.38	3,000	5,500	1,080	.49	5.6	7,200	20	2,110	2,610	310	680	320	330
	12	.41	6,700	9,400	1,340	1.97	6.8	9,600	20	4,310	5,370	750	880	530	480
Pine, northern white (*Pinus strobus*)	68	.34	3,100	5,000	1,020	.54	5.2	6,700	17	2,060	2,490	290	660	310	310
	12	.36	6,000	8,800	1,280	1.59	6.7	9,500	19	3,680	4,840	550	860	500	400
Pine, Norway (*Pinus resinosa*)	54	.44	3,700	6,400	1,380	.59	5.8	7,500	28	2,410	3,080	360	780	360	340
	12	.48	9,400	12,500	1,800	2.78	10.0	15,900	25	5,330	7,340	830	1,230	670	580
Pine, ponderosa (*Pinus ponderosa*)	91	.38	3,100	5,000	970	.59	5.1	6,800	20	2,070	2,400	360	680	300	310
	12	.40	6,300	9,200	1,260	1.85	6.6	9,800	17	4,060	5,270	740	1,160	550	450
Pines, southern yellow:															
Loblolly (*Pinus taeda*)	81	.47	4,100	7,300	1,410	.68	8.2	8,900	30	2,550	3,490	480	850	420	450
	12	.51	7,800	12,800	1,800	1.92	10.4	12,100	30	4,820	7,080	980	1,370	750	690
Longleaf (*Pinus palustris*)	63	.54	5,200	8,700	1,600	.95	8.9	10,100	35	3,430	4,300	590	1,040	550	590
	12	.58	9,300	14,700	1,990	2.44	11.8	15,400	34	6,150	8,440	1,190	1,500	920	870
Shortleaf (*Pinus echinata*)	81	.46	3,900	7,300	1,390	.63	8.2	8,600	30	2,500	3,430	440	850	410	440
	12	.51	7,700	12,800	1,760	1.93	11.0	13,600	33	5,090	7,070	1,000	1,310	750	690
Pine, sugar (*Pinus lambertiana*)	137	.35	3,400	5,100	940	.70	5.4	7,400	17	2,330	2,530	350	680	320	310
	12	.36	5,700	8,000	1,200	1.53	5.5	10,700	18	4,140	4,770	590	1,050	530	380
Pine, western white (*Pinus monticola*)	54	.36	3,400	5,200	1,170	.56	5.0	7,600	19	2,430	2,650	290	640	310	310
	12	.38	6,200	9,500	1,510	1.47	8.8	11,900	23	4,480	5,620	540	------	440	370
Poplar, yellow (*Liriodendron tulipifera*)	64	.38	3,400	5,400	1,000	.62	5.4	8,600	18	1,930	2,420	330	740	390	340
	12	.40	6,100	9,200	1,500	1.43	6.8	13,500	20	3,550	5,290	580	1,100	560	450
Redwood (virgin) (*Sequoia sempervirens*)	112	.38	4,800	7,500	1,180	1.18	7.4	8,900	21	3,700	4,200	520	800	570	410
	12	.40	6,900	10,000	1,340	2.04	6.9	10,200	19	4,560	6,150	860	940	790	480
Spruce, eastern [11] (*Picea* sp.)	46	.38	3,300	5,600	1,110	.57	6.5	7,000	21	2,120	2,660	290	710	390	340
	12	.40	6,500	10,100	1,440	1.68	8.4	11,400	22	4,160	5,580	590	1,070	630	490
Spruce, Engelmann (*Picea engelmannii*)	100	.31	2,500	4,200	830	.43	4.9	5,800	14	1,680	1,980	290	590	250	240
	12	.34	6,000	8,500	1,160	1.64	5.6	9,000	15	3,580	4,580	640	1,010	450	310
Spruce, Sitka (*Picea sitchensis*)	42	.37	3,300	5,700	1,230	.53	6.3	8,400	24	2,240	2,670	340	760	430	350
	12	.40	6,700	10,200	1,570	1.62	9.4	11,400	25	4,780	5,610	710	1,150	760	510
Sugarberry (*Celtis laevigata*)	62	.47	3,200	6,600	810	.78	12.0	8,200	33	1,990	2,800	580	1,050	840	740
	12	.51	6,200	9,900	1,140	2.18	11.2	11,600	36	3,970	5,620	1,240	1,280	1,280	960
Sycamore (*Platanus occidentalis*)	83	.46	3,300	6,500	1,060	.60	7.5	8,800	26	2,400	2,920	450	1,000	700	610
	12	.49	6,400	10,600	1,420	1.66	8.5	10,500	26	3,710	5,380	860	1,470	920	770
Tamarack (*Larix laricina*)	52	.49	4,200	7,200	1,240	.84	7.2	7,800	28	2,930	3,480	480	860	400	380
	12	.53	8,000	11,600	1,640	2.19	7.1	12,500	23	4,780	7,160	990	1,280	670	590
Walnut, black (*Juglans nigra*)	81	.51	5,400	9,500	1,420	1.16	14.6	11,900	37	3,540	4,300	600	1,220	960	900
	12	.55	10,500	14,000	1,680	3.70	10.7	16,400	34	5,780	7,580	1,250	1,370	1,050	1,010

[7] Average of bitternut hickory (*Hicoria cordiformis*), nutmeg hickory (*H. myristicaeformis*), water hickory (*H. aquatica*), and pecan (*H. pecan*).
[8] Average of bigleaf shagbark hickory (*Hicoria laciniosa*), mockernut hickory (*H. alba*), pignut hickory (*H. glabra*), and shagbark hickory (*H. orata*).
[9] Average of black oak (*Quercus velutina*), laurel oak (*Q. laurifolia*), pin oak (*Q. palustris*), red oak (*Q. borealis*), scarlet oak (*Q. coccinea*), southern red oak (*Q. rubra*), swamp red oak (*Q. rubra pagodaefolia*), water oak (*Q. nigra*), and willow oak (*Q. phellos*).
[10] Average of bur oak (*Quercus macrocarpa*), chestnut oak (*Q. montana*), post oak (*Q. stellata*), swamp chestnut oak (*Q. prinus*), swamp white oak (*Q. bicolor*), and white oak (*Q. alba*).
[11] Average of black spruce (*Picea mariana*), red spruce (*P. rubra*), and white spruce (*P. glauca*).

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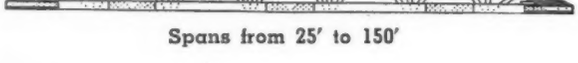

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doubt accounts for the fact that the first mill was erected at Black River Falls.

The running of logs and lumber on the Mississippi River began as early as 1842 or 1843. They went to mills at such points as Rock Island, Ill.

Lumbering operations in the Chippewa basin are said to have gotten underway during the 40's. From early spring, until ice closed the river in the late fall there was almost a constant stream of logs floating down river to the sawmills. Many of the mills in operation then were located on the Chippewa River.

During the years 1856-57 sawmills were erected at Marinette, and then began the cutting of the timber in the Menominee River basin. This mill is reported to have been located approximately at the present site of the Interstate Bridge now joining Marinette and Menominee.

Mills constructed at Oshkosh, Wis. operated very largely from the timber in the Wolf River basin. The first mill was erected in 1847. Later on many other mills were erected, and Oshkosh acquired the name of the Sawdust City.

In spite of an abundance of timber supply and low operating costs there were many bankruptcies and failures in this early lumber business. Capital investment was considerable inasmuch as an operator covered the entire field and had to own the timber holding, logging equipment and a sawmill. Cut-throat prices were the chief cause for failure. Logs were on the market at only slightly more than the labor cost and manufactured lumber was sold at correspondingly low figures.

Species, their properties and uses:

NORTHERN WHITE PINE (Pinus Strobus)

Northern forests with cool humid environment produce high quality white pine.

Of fine, uniform, soft texture, the wood is light in weight, shrinks and swells little, and is not subject to distortion. It is easy to dry, excellent for woodworking, takes and holds paint well. Although rated as one of the weaker woods, it was the chief structural species in Northeastern America for a hundred and fifty years.

Though of rapidly diminishing volume, this wood is still famous for many uses: chiefly window sash, blinds, and frames, high quality pattern work, and a wide range of industrial and construction uses from matches to shipbuilding.

NORTHERN HEMLOCK (Tsuga Canadensis)

Northern Hemlock, which succeeded White Pine as a material for structural purposes in the North is of uniformly slow and even growth. The tree is of medium size so that knots and other characteristics are of a relatively small type. Somewhat stronger and stiffer than White Pine, it is comparable to that wood in low shrinkage and swelling tendencies, and because of this has a good reputation for nail holding. It is light to handle, works easily, and the lumber is used almost entirely for construction purposes and crating. It is non-resinous so holds paint well. It does not stain and requires no chemical or toxic treatment to preserve bright appearance.

Northern Hemlock is also prominently used in the paper industry in the manufacture of pulp.

MAPLE (Acer)

Of the five species of Maple having commercial importance, hard maple (sugar maple, Acer sacchrum)

is probably most widely known for its high serviceability. It is heavy, hard, strong, and stiff, high in resistance to both shock and abrasion.

Soft Maple usually grows on wetter soil, produces wood lighter in weight, darker in color and lacking some characteristics which make Hard Maple compliant to the requirements of many industries.

Maple flooring supplies the surface for dance floors, gymnasiums, bowling alleys, country-wide mercantile organizations and for factory floors.

Prominent in athletic equipment because of strength and smoothness, it does not sliver or mar easily. Of pleasing grain figure capable of high polish, it occupies an important position in the furniture industry. The creamy white wood of Maple is identified with the finest piano actions, shoe heels and lasts, and woodenware articles.

Birdseye Maple, prized for its unusual decorative possibilities, is a distinctive accidental figure occurring in some trees.

YELLOW BIRCH (Betula-lutea)

Yellow Birch is a fine and versatile cabinet wood because of its pleasing grain and ability to work satisfactorily on all types of woodworking machines such as planing, shaping, turning, and sanding. It is hard, stiff, of superlative strength, and high shock resistance.

Although unexcelled for both enamel and paint decoration, it is usually finished in natural grain conformable to a wide variety of color tone expression.

"Curly" birch is a variation of grain exhibiting a wavy figure. The heartwood of Birch is reddish in color abruptly contrasting the nearly white sapwood. This difference has led to selection in color for certain particular purposes wherein the heartwood pieces are designated as "Selected Red" Birch, and the sapwood as "White" Birch.

Birch stands in volume among the first four species in furniture, ranks high in trim and architectural woodwork, is important in many industrial uses.

ELM (Ulmus)

Of the Elms inhabiting northern forests, American Elm (Ulmus Americana) also known as Gray Elm, or Soft Elm, is of first importance, followed by Rock Elm (Ulmus Racemosa).

The Elms possess excellent bending qualities, shock resistance and strength. The wood is light in color, of medium weight and density, comparable to the Oaks in many physical properties.

Rock Elm is highest in strength and about equal to White Oak in shock resistance.

The importance of Elm for cabinet application is expanding and when finished in natural grain it exhibits a distinctive lace-like figure. It is used for vehicle parts, church pews, furniture, bent parts, boxes, baskets, musical instruments, implements, and equipment of various kinds.

BASSWOOD (Tilia glabra)

Basswood is the fastest growing of the northern hardwoods and frequently attains large size. While this wood is classed as a hardwood, it being a broad leaved tree, the texture is softer than most softwoods. This soft and uniform quality makes the wood highly esteemed. The creamy white color conforms with that which custom has accepted as being most appropriate for piano keys, woodenware, drawing boards.

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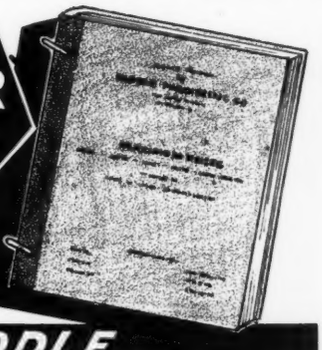

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While war needs are taking the major part of the output of our 5 mills, we are doing our best to take care of as many of our regular customers' requirements as stock not on direct war call will permit.

When peace is restored, all 5 mills will again serve their customers with the same dependable quality and reliable service as of yore.

Serving the Trade Since 1906

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NACOGDOCHES, TEXAS

NACOGDOCHES COUNTY LUMBER CO.
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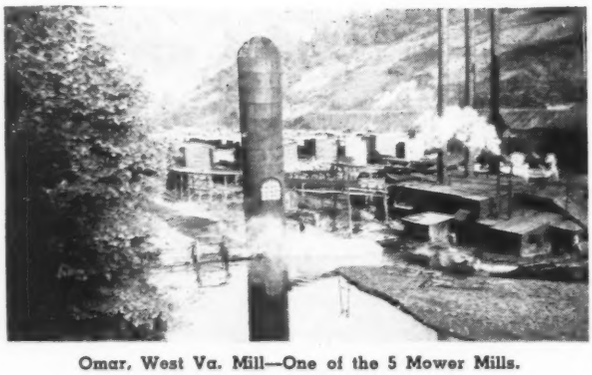
MOWER



Omar, West Va. Mill—One of the 5 Mower Mills.

5 MILLS CUTTING

The name, Mower, has long stood for quality in Appalachian forest products. Annual capacity 50 to 60 million feet. Air dried, kiln dried, rough or dressed lumber; Oak, Maple, Birch and Beech Flooring; Mouldings, Trim, Poplar Bevel Siding, Dimension Stock, Timbers.

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THE MOWER LUMBER COMPANY
Charleston, West Virginia
Mills at: Omar, Marmet, Cass, Colcord & Pettus, West Va.
Dry Kilns, Planing Mills, Flooring Plants

blind slats. A fine wood for paint and enamel finishes containing no resinous substance to exude through the paint film.

ASH (Fraximus)

Two principal species of Northern Ash of commercial importance, are Black (also called Brown Ash, *Fraximus nigra*) and White Ash, (*Fraximus Americana*). Black Ash is produced from old slow-growth trees which vegetate in cool northern swamps. For a hardwood, it has moderate shrinkage, also possessing superior bending qualities, good shock resistance, and ability to hold its shape better than most hardwoods. It works well and takes a fine natural finish. An unusual peculiarity found only in Black Ash is the capacity to separate the wood between the annual rings into sheets when subjected to certain manual processes, a property made use of in the making of baskets.

Northern White Ash, now largely of second growth, is heavy, strong, hard, stiff and has high shock resistance. It also works and bends well, is preferred for snow shoes.

Black Ash, of finer grain figure, is essentially a cabinet wood, whereas the heavier and stronger White Ash finds its greatest usage in such purposes as handles, vehicle parts, agricultural implements and sporting goods.

WHITE CEDAR (Thuja occidentalis)

Untreated White Cedar poles and posts have shown exceptional service performances. Comparatively weak and brittle when measured by strength standards, its resistance to decay has made it outstanding. The tree grows in northern swamps, usually so crowded that growth is retarded.

The lumber is sometimes used for canoe and small boat planking, but the best known sawn product is the White Cedar shingle. Untreated White Cedar hewn and sawn railroad cross ties have been used widely in situations where decay was a hazard.

NORWAY PINE (pinus resinosa)

Norway Pine is also called Red Pine, the latter name being attributed to the distinctive reddish-brown color of the bark.

The wood is heavier, harder, and stronger than White Pine and is used almost exclusively for structural purposes.

OAK (Quercus)

The fifty species of Oak growing in North America, twenty of which are important commercially, naturally separate into two divisions, White Oak, and Red Oak. In general, all the Oaks are heavy, hard, stiff, and strong. An "open-grained" wood, Oak, when used for cabinet purposes, is appropriate for natural finishes only. There is too wide a variety of properties contained among the many species of Oak to warrant discussion here but it can be stated that the slower growth resulting from conditions which generally prevail in the North produces an old growth wood of softer, finer grain, more highly valued for its architectural value than the faster growth which is stronger, harder, and of coarser texture.

The Oaks exhibit considerable longevity and persistence of growth and their strength properties are comparable. Both Red Oak and White Oak have wide industrial and construction uses.

BEECH (Fagus grandifolia)

Almost unique among hardwoods, all Beech lumber comes from one species of tree.

The wood is heavy, hard, strong, and stiff, and is

frequently used as a passable substitute for Hard Maple and Birch.

Except for its wider shrinkage (tangential) Beech would closely approach Birch and Maple for flooring excellence as it performs well when subjected to abrasion. One of the largest uses is for railroad cross ties, also important for boxes, crates, baskets, handles and to some extent, in furniture.

JACK PINE (Pinus banksiana)

Jack Pine is a coarse grained resinous Pine that reproduces itself on dry, barren and sandy soil unsuited to most trees, frequently becoming the permanent forest growth on burnt-over areas. Sometimes sawn into lumber, its greatest use is for pulp in the manufacture of kraft papers.

EASTERN SPRUCE (Picea glauca, Picea mariana)

Both possess about the same properties. The wood stays in place well, is moderately light, easily worked, has moderate shrinkage and moderate strength, is uniformly light in color. Its best known use is for paper pulp, but also appears prominently in small frame construction as boards and dimension, is an important box material.

Other Northern Species

Other species produced commonly in the region include Aspen or Popple, a fast growing second growth species used principally for food boxes and pulp; Tamarack, a wood once important in lumber production which nearly disappeared due to an insect infectation; Balsam Fir, Butternut, Black Walnut, and Black Cherry.

War Uses of Northern Woods

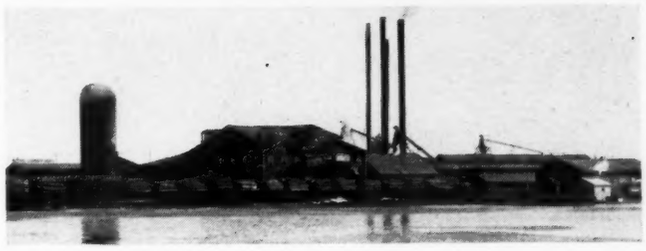
The distinctive properties of certain Northern woods have been usefully employed in certain essential war uses. Outstanding among these is the position occupied by Northern Birch, the most adaptable species in the entire list. When the history of this war is finally written it will be shown that the British aircraft, made principally of Northern Birch, was important in saving Great Britain. Besides this most dramatic contribution, it is used extensively in Signal Corps, Ordnance Department, Medical Corps and Quartermaster equipment, for ships and boats, Army and Navy woodenware, furniture and equipment as well as boxes, crating, and dunnage.

Basswood shares with White Pine the important Navy template use and is found in a variety of other war necessities such as medical and surgical supplies, cabinets, lockers, drawing boards, and certain airplane parts. In vital civilian equipment it is used in agricultural implements, flour mill machinery, bee-keeper supplies, caskets, and food containers.

Hard Maple, the principal hardwood in the region in point of volume, provides the shoe lasts on which all Army and Navy shoes are manufactured together with much footwear for our Allies. It has several distinctive places in aircraft including test clubs, flight propellers, and other parts. It is used almost exclusively for Army and Navy meat blocks, cook tables, cutting tables, and work bench tops, and a wide variety of kitchen and other woodenware. Medical and surgical equipment, skiis, tanks, toboggans, truck and cargo bodies, brushes, tentage, chairs, cots, boxes and crating are only a few of the many contributions to the armed services.

On account of its strength and high shock resistance, Rock Elm is valued for vehicles including truck

YAWKEY-BISSELL MILL
Completes 27 Years

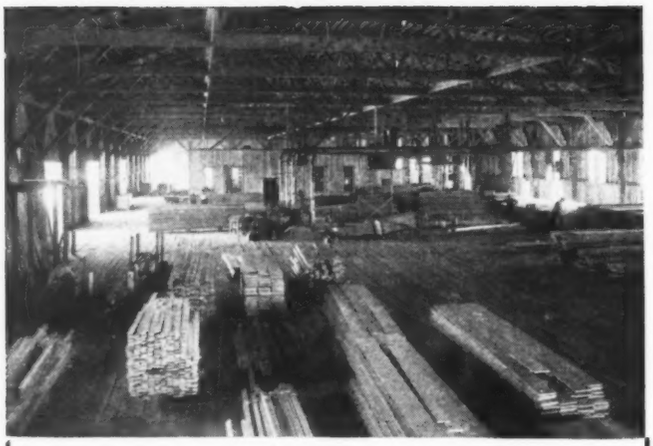


Has Cut 650 Million Feet Hardwoods, Hemlock, Pine.

In May of this year the Yawkey-Bissell Lumber Co. completed 27 years of continuous operation at White Lake, Wis. This mill has produced more than 650 million feet of Northern Hardwoods, Hemlock and White Pine lumber since the first log was sawn in May, 1916. The present Yawkey-Bissell Lumber Co. grew out of pioneer Wisconsin enterprises started back in the 1870's.

YAWKEY-BISSELL LUMBER CO.
WHITE LAKE, WISCONSIN

Mountain High in Quality
CRAIG MOUNTAIN PONDEROSA PINE
CRAIG MOUNTAIN LUMBER CO Winchester, Idaho
Victory means priority handling of government requirements in Craig Mountain Ponderosa Pine. When victory is achieved we'll be back on the job with our customary service and quality.
In the meantime we ask the indulgence of customers whose needs we are unable to handle.



Alexander-Yawkey Planing Mill, Prineville, Oregon.

A-Y OCHOCO
Soft Pine

Kiln-Dried Ponderosa
WAR LUMBER

Alexander-Yawkey Lumber Co.
Members Western Pine Association — Prineville, Oregon

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and cargo bodies, boat ribs, cots and heavy crating.

Outlook for the Future:

The task of estimating available timber, in any one section, and from that trying to draw conclusions as to the future of the industry in that section is extremely hazardous. Detailed estimates compiled about 1923 indicated that the total commercial timber stand in Wisconsin at that time was a little more than 15 billion feet. An equally authoritative estimate made 15 years later, in 1938, sets up a figure of 17 billion feet as the Wisconsin timber stand.

The accompanying figures are based upon the most recent detailed survey of the situation made in 1938. At an average rate of cutting, the figures indicate

Hardwoods	M feet b. m.
Sugar maple	10,538,120
Yellow birch	5,252,230
Basswood	2,039,200
Elm	3,178,690
Beech	1,496,000
Oak[1]	5,297,790
Aspen[2]	4,125,700
Paper birch	1,288,340
Soft maple	1,742,640
Miscellaneous hardwoods[3]	1,776,280
All hardwoods	36,734,990
Softwoods	M feet b. m.
White pine	3,753,200
Red pine	1,478,380
Jack pine	2,677,790
Spruce	2,362,730
Balsam-fir	1,089,310
Tamarack	297,340
Hemlock	9,222,000
All softwoods	20,880,750
All species	57,615,740

[1]Includes both red and white oak.
[2]Includes balsam poplar and cottonwood.
[3]Principally black ash, hickory, and hop-hornbeam.

that it would take around forty years to exhaust the various resources if forest growth was completely stopped from now until then. On the basis of old smaller estimates it was said that sustained yield would be insured if production in that area was limited to 300 million feet per year, but later figures indicate that a much larger cutting can be made each year and the forest still be maintained on an everlasting basis.

At any rate, every indication is that lumber consuming industries can count upon a stable supply of northern woods for a great many years.

Southern Region

Origin and Development of the Industry:

The Federal Census of 1810 shows something over 200 sawmills in the Southern states and territories. The majority of these were cutting hardwoods and cypress principally, and only a few were cutting pine. The manufacture of Southern pine began on a noticeable scale a few years after the civil war, but it was not until about 1880, when the first great railroad systems were completed through the South, that the lumber products of that section began to move into other parts of the country. The real boom in the use of Southern pine in the North and the East came after the species had attracted national notice as a construction medium for several buildings in the 1893 World's Fair in Chicago. First Southern pine exports, according to best available information were made from Darien, Ga. in 1875 by Josepha du Robert Hunter. These went to England. By 1886 the wood was exported in fair sized quantities from Mobile, Pascagoula, and Pensacola.

Species, their properties and uses:

SOUTHERN WHITE ASH (Fraxinus americana)

A moderately heavy, hard, strong wood, distinguished for its shock resistance. It retains its shape well and resists warping and shrinking. Takes screws well without splitting. It responds to steam bending and glues successfully. The wood is light creamy white with pronounced grain. Two textures, "cabinet ash" and "tough texture ash" have different uses: the former for woodworking purposes, the latter for those where great strength is a requirement.

Ash has large open pores and is not recommended for paint except in special applications where appearance is secondary to strength. Most attractive and successful treatment is with light natural stains or clear varnish and shellac.

Ash is used principally for industrial purposes—more so than for construction. Auto and truck bodies, agricultural implements, handles, food containers, athletic equipment, refrigerators, are an outlet for quantities of it. Some goes into interior trim, doors, kitchen tables and chairs and cabinets, etc.

SOUTHERN BASSWOOD (Tilia americana)

Soft textured and light weight basswood is a hardwood in botanical classification only. The wood has a diffuse porous, fine grain, and is nearly white in color. Dark brown mineral streaks are frequently found in the wood and are to some extent a means of identification. Basswood glues easily, stays in place without warping or twisting. It is not suited to bending but because of its uniform softness it can be carved into the most intricate objects. Strength properties are low. Because it is a hardwood it contains no resin and makes good drawing boards. It is an excellent veneer core and is used for furniture parts and cabinet work. Must be thoroughly sanded before painting.

SOUTHERN BEECH (Fagus grandifolia)

An attractive, fine grained hardwood, strong and hard but not too difficult to work. It turns well on a lathe and planed surfaces are often so smooth that sanding is unnecessary. Heartwood is reddish—sapwood a pale flesh color. Beech tops practically all woods in nail and screw holding properties. It has high tensile strength and other good strength properties. The surface will take natural finish or paint very well.

The wood is popular as flooring, and is widely used for tool handles, especially for small tools which have handles that require difficult turning. Brush manufacturers prefer it for their products. Beech furniture is economical and attractive.

COTTONWOOD (Populus deltoides)

Because of its long fibre, cottonwood is a tough and durable hardwood under mechanical abuse in spite of its light weight. It is uniform in texture and works easily. Cottonwood is one of the best woods for nailing. It lacks odor, is lightweight and of natural white color. These properties make it a fine crating and box material, and the largest part of cottonwood production goes into these uses. The wood is also used for veneer, planing mill products, agricultural implements, excelsior, etc. Before painting the fuzzy grain must be removed by sanding.

SOUTHERN SOFT ELM (Ulmus americana)

Properties are similar to those of black gum, but appearance is quite different. Grain is prominent and texture quite coarse. Heartwood is dark brown, sap-

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M. A. Wyman, Owner and Manager. **M. H. Wyman,** Assistant Manager.

Douglas Fir — Ponderosa Pine
West Coast Hemlock — California Sugar Pine
Sitka Spruce — Idaho White Pine
Western Red Cedar

Yard stock, railroad and car material, industrial lumber, structural timbers, special items.

A. M. Paulson, Manager Pine Department. **E. H. Luke,** Manager Cedar Department. **Ed Doran,** Manager manufacturing department (**M. A. Wyman Mill Co.,** Granite Falls, Wash.)

wood a pale tan. Colorful streaks are abundant. It bends easily and resists splitting by screws and nails better than most woods. Clear or stain finish is recommended as most satisfactory. Quantities go into toy, box, basket and vehicle manufacture and into boat bending members. Furniture, sleds, interior trim and paneling also are made of Southern elm.

RED AND SAP GUM (Liquidambar styraciflua)

Sap gum is lumber obtained from the sapwood of the red gum tree. Since the young trees run largely to sapwood, the bulk of sap gum lumber is cut from young stock and the red gum from old mature timber. Physical properties of the two are practically identical. They have a soft though firm texture and respond well to all cutting tools. They outrank many hardwoods in bending quality. With reasonable protection from moisture, they will stay in place perfectly.

Figured stock makes attractive cabinet work and is largely used for this purpose. Red Gum is available in a wide variety of grains and specifications and may be obtained either quarter sawn or plain, and from figured or uniform colored stock. The finish is good for natural or paint treatment. Gum leads all other woods in production of veneer.

BLACK GUM AND TUPELO (Nyssa sylvatica and N. aquatica)

The two woods are similar in appearance and properties and no attempt is made by lumber inspectors to differentiate between them. Black gum and tupelo sapwood are as near white as any wood that grows. The heartwood is grey but is of small volume in comparison with sapwood. Both have fine uniform texture, and an interlocking fibre which makes them difficult to split. They work without difficulty and take an excellent finish. With proper seasoning it stays in place well. The bulk of black gum and tupelo lumber is used in making furniture, flooring, interior trim, tobacco boxes, card stock, and specific containers.

HACKBERRY (Celtis laevigata)

A whitish hardwood resembling ash or elm. It is medium hard in texture, of moderate strength and has a low shrinkage and is usually quite free from defects. It resists warping and twisting. It is one of two least difficult woods to glue. It works well. It ranks third among woods which do not impart taste or odor to foods. The furniture industry is the principal market for hackberry. To some extent it is going into food containers and has found some acceptance for paneling and interior trim.

SOUTHERN HICKORY (Hicoria sp.)

Hickory possesses a combination of strength, toughness and elasticity which is unique. However, it is not resistant to decay when it is in contact with the ground or dampness unless especially treated. Heartwood is red and contains a darker streak of brown while sapwood is white. Both have the same strength properties.

It is the accepted wood for skis, axe handles, tennis rackets and many other small specialized items, as well as motor vehicles. Hickory is hard but not unworkable by any means. It responds well to all types of stains and natural finishes.

SOUTHERN MAGNOLIA (Magnolia grandifolia)

Second only to oak in bending quality, medium hard, and of excellent working qualities, magnolia is used in woodworking plants to make cabinets, interior trim,

door fixtures, doors, panels, etc. It is of light blond color in sapwood and very dark brown to black in heartwood. Grain is straight and more conspicuous than that of poplar. It is reputedly warp resistant. The wood comes out of moulders so smooth that no sanding is required. Selected black heart magnolia makes interesting and striking paneling effect.

SOUTHERN SOFT MAPLE (Acer rubrum and Acer saccharinum)

This wood comes from trees known as red maple and silver maple. Its only difference from hard maple is in its degree of hardness. It glues better than hard maple, bends more easily and splits less frequently in screwing. It is second in the list of woods which are free from odor and taste. It resists warping and twisting but is difficult to plane smoothly. It has uniform texture and fairly conspicuous grain, and takes a fine finish. Frequently the additional designation to the standard grades are added; WHAD or WHND, meaning Worm Holes are Defects, or, Worm Holes No Defects. Maple is used widely for furniture manufacture and also for flooring, planing mill products, food containers and school desks.

SOUTHERN RED & WHITE OAK (Quercus sp.)

Oak is fairly heavy, hard and stiff. Shock resistance is high and bending qualities are far above average. Red oak and white oak differ very slightly in physical properties. Red oak heartwood is of slightly coarser grain than that of white oak. It is among the least difficult woods to plane and shape. It is intermediate in turning and splitting properties, but is warp resistant, and holds nails and screws exceptionally well. White oak is slightly more resistant to decay than red oak, but both should be treated when used in contact with the ground. It is widely used for flooring, for agricultural implements, and in the furniture industry. Cabinet work and interior trim is made from oak in large quantities, and other uses requiring dependability and long service and good appearance have long employed this material.

PECAN (Hicoria pecan)

Pecan is part of the hickory family, and like that wood is very hard and tough. It is among the least difficult of all woods to shape and turn, and ranks high in nail and screw holding ability. It is of rich, reddish color in the heartwood which is marked by streaks of darker red, and some boards show a curly grain, others a tiger stripe or burl. Sapwood is nearly white and takes an excellent finish. It is highly dependable for remaining in place without showing shrinkage or expansion. There is a porous grain on the wood surface. Its strength does not quite approach that of hickory, but it has a more pleasing grain on the wood surface. It finds wide use for school desks, truck and trailer bodies, and to some extent for athletic equipment.

SOUTHERN YELLOW POPLAR (Liriodendron tulipifera)

A clear straight grained soft textured wood of excellent working qualities with heartwood of pale greenish yellow and sapwood quite white. The wood has little warping tendencies and takes paint very well, the surface never showing a raised grain or discoloration due to resins. It is of moderate physical strength, and among the easiest wood to nail and glue, but its nail holding ability is not as great as most hardwoods.

Yellow poplar has probably been used by more dif-

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And throughout all of these years the name, Gillies, has always stood for honest values and dependable quality—as it does today.

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Capacity 30 million ft. annually
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and for 32 years we have been consistent readers of American Lumberman. Our congratulations to American Lumberman on its 70th Birthday. May its future be as useful as its past to our industry.

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CONGRATULATIONS

From 1873 to 1943 covers a big span in the development of the Pacific Northwest's lumber industry in which you have been a considerable factor.

We congratulate you and wish you many anniversaries in the days to come.

E. C. Miller Cedar Lbr. Co.

Aberdeen, Washington

ferent industries than any other wood in the world. Today it goes principally into furniture, boxes, sash, interior and exterior trim, siding and general millwork. It is used by musical instrument manufacturers and in the motor vehicle industry. Great quantities are used for glued-up veneer cores.

SOUTHERN SYCAMORE (Platanus occidentalis)

A fine uniformed textured hardwood which, because of conspicuous medullary rays has distinctive beauty. Heartwood is reddish brown, blending into sapwood of pale flesh color. It has interlocked fibre giving it an inherent ability to withstand splitting. It is rated moderate in such properties as hardness, stiffness, strength and shock resisting abilities. It retains form well after steam bending, and is excellent for food container manufacture. Nail holding power is intermediate. It is best finished when treated with white shellac and can be stained or painted.

WILLOW (Salix nigra)

Willow is a soft hardwood of uniform texture with heartwood of grey to brown color and sapwood light brown to flesh. It is a difficult wood to plane, shape and turn smoothly, but once worked it will stay in place without warping or otherwise moving. It resists splitting, but does not hold nails or screws as well as harder texture species. However, no other wood glues as easily or under as wide a range of conditions. After planing, the surface is slightly fuzzy but can be sanded smooth. It can be painted or enameled successfully or finished clear.

LONGLEAF PINE (Pinus palustris)

A tree of slow growth compared with other pines of the South. The wood is heavy, exceedingly hard

A stand of virgin longleaf pine in Georgia

for pine, strong, tough, compact, durable, resinous. Its strength and durability make it the choice one of the Southern pines for heavy structural purposes. The annual rings contain a large portion of dark colored summerwood which accounts for its strength factor.

SHORTLEAF PINE (Pinus echinata)

This pine is of somewhat softer texture than longleaf pine and works easily. It is not as highly resinous, the best grades being almost free of resin. It is widely used for interior trim as it takes paint well and nails well without splitting. Although not as strong as longleaf it has sufficient strength to make it highly satisfactory for residence structural and

other members. It is fine grained though not as dense as the heavier pines. Arkansas soft pine is considered by many to be top in quality of the shortleaf pines.

AROMATIC RED CEDAR (Juniperus virginiana)

Heartwood is purplish red and sapwood pale yellow to white. The wood is light, aromatic, durable and generally knotty. It is one of the few woods in which defects of this nature add to its value. It will take a high polish and is pleasing finished in natural color. Closets lined with it are moth proof. It has been the standard wood for lead pencils because it is light, very soft, with a fine even grain that whittles easily. It is among the most durable of woods when exposed to decay producing factors.

TIDEWATER RED CYPRESS (Taxodium distichum)

All woods commercially designated as Cypress do not have the same inherent values. Tidewater Red Cypress is the trade name applied to Red Cypress (coast type) as defined in American Lumber Standards. It is the Cypress grown in the deep swamps of the coastal plains of the Southeastern States, and along the Gulf of Mexico adjacent to tidewater. There are also two inland types of Cypress classified as Yellow and White Cypress.

Tidewater Red Cypress is commonly called "the wood eternal" and its great durability is traced to Cypressene, a resin-like natural preservative contained in the heartwood.

Its strength lies between the light and heavy pines and it can be had in structural grades of known strength and stiffness. Properly seasoned, it has little tendency to warp, twist or buckle and has satisfactory

Left: Cypress vats. Center: Swamp conditions in which cypress grows. Right: Cypress paneling

nail-holding power. It glues easily with glues commonly used in woodworking.

Tidewater Red Cypress offers a wide range in types of grain, figure and color, for wall paneling—clear, knotty and "pecky", the latter a type of wood peculiar to Cypress alone and used to secure old or antique effects. The wood is moderately close-grained, due to slow growth. The color of the sapwood is light, whereas the heartwood, usually reddish, may range from chocolate to nearly black.

Official tests on millwork and siding grades show that it holds paints exceptionally well. For natural finishes it takes stains perfectly.

Tidewater Red Cypress does not impart taste, odor or color to food products placed in direct contact with the wood, making it a principal wood utilized by the food industry. Because of its pronounced resistance to the action of commonly used acids and alkalies it

Lassen Lumber & Box Co.

Sales Office:

Monadnock Bldg., San Francisco

Mill at Susanville, Calif.

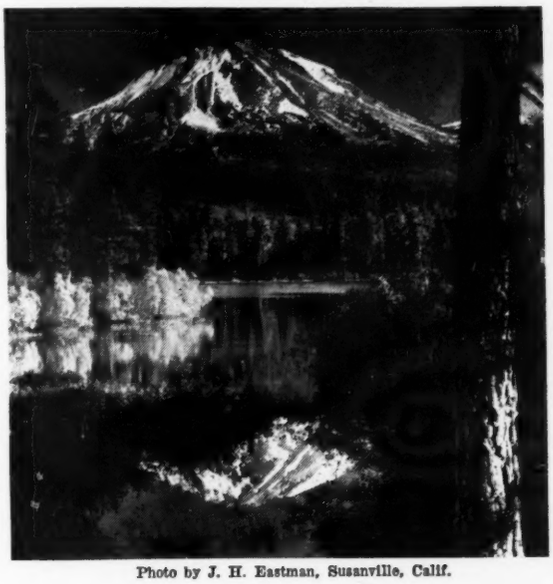

Photo by J. H. Eastman, Susanville, Calif.

For 25 Years Manufacturers of Lassen Quality Ponderosa Pine, Lumber and Box Shook

Annual Production 50 Million Feet

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Band Sawn Hardwoods and Yellow Pine

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We are Operating Six Band-Mills Forty-eight Hours per Week for VICTORY

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Our Congratulations to

American Lumberman on its 70th Anniversary

Our sincere regrets to old customers whose orders we have been unable to fill during this wartime on account of priorities and inability to obtain help. We shall welcome the day when we can again pick up with old customers and friends.

Meadow River Lumber Co.

Rainelle, West Va.

is an important wood for the chemical industry.

For home construction it is used for both interior and exterior purposes. Tidewater Red Cypress is particularly valuable where wood comes in contact with the earth or is exposed to the elements—for siding, exterior trim, door and window frames, window sash, porch columns, porch floors, shingles, foundation timbers, etc. Its figure, stability and wide range of finishes to which it is susceptible, make it desirable for interior millwork, doors and wall paneling.

Tidewater Red Cypress is extensively used for industrial buildings, especially where humidity prevails or other conditions exist that are conducive to decay or insect attack.

The railroads use large quantities of this wood for refrigerator cars, for buildings and equipment, for ties, bridges, water tanks, posts and extensively for the trunking and capping for electrical signal systems.

On the farms in the Central and Eastern States, Tidewater Red Cypress has long been used for watering troughs, fences, silos, water tanks.

Industrially, Tidewater Red Cypress has attained its highest utilization as a tank and vat material. Caskets, coffins and burial boxes are made of it. For boat construction, it is a "natural." Makers of out-of-door furniture are also large users of this wood.

Outlook for the Future:

The Southern industry, both in hardwoods and softwoods, holds a promise of production for many years to come. The longleaf pine industry has been cut into heavily in the past, and because reforested pine is liable to be of softer texture, the longleaf industry hinges its future production on careful selective cutting practices today. The fact that some mills in the South are operating profitably on sustained yield, reforestation material indicates that the industry can continue to send lumber to market indefinitely. Virgin hardwood timber resources in the South are tremendous and modern, enlightened logging methods insure the fact that this timber will be used to the best advantage, and safeguarded over the years to come.

Western Pine Region

The Western Pine region covers about one-third of the area of continental United States. Lying within

Boundaries of the Western Pine Region

the vast expanse of the inland plateau and mountainous country of twelve western states, it borders on the eastern slopes of the Cascade Range in Washington and Oregon; sweeps south along the Sierra Nevada in California; extends eastward across the watersheds of the Rocky Mountain states, including the Black Hills in South Dakota, and stretches from Canada on the north to the Mexican border on the south. The bulk of the region's lumber production comes from the ten states on the outer limits of this area, in which are located the extensive pine forests that now constitute the principal source of soft pine lumber.

Origin and Development of Industry:

April 1, 1840, the first sawmill in the Western Pine region cut its first boards. This was at Lapwai in northern Idaho, near the present site of Lewiston. It was a primitive type of mill, driven by a water wheel and equipped with a gig-saw. (See transcript of story.)

Probably the first sawmill to operate in California was the famous "Sutter's mill," which was built at Coloma in the year 1847. It was a water-power mill owned and operated by James W. Marshall, who was the man who discovered gold in the tail race.

In 1862 B. L. Warriner built the first sawmill in the Boise Basin in Idaho. This, also, was a waterpower mill. Two other small mills were installed about the same time by other men whose names are now unknown.

The fourth sawmill in the Boise Basin was erected at Idaho City. It was built by Major Taylor in July, 1863, and was the first steam-powered sawmill in Idaho Territory.

In eastern Oregon there was a sawmill located at Auburn, a gold mining camp in Baker County, as early as 1865.

The earliest operation in Arizona was a mill started in 1882 which cut ties for the Santa Fe Railway.

These early mills were local ventures, primarily to supply lumber for miners to construct sluice boxes and cabins, or to cut ties and timbers used in the building of railroads. Other small mills were built at various places to serve the needs of pioneer settlers as they moved into the West to build their first homes in local communities.

Since none of the western pine forests are located near the seacoast, the general development of a lumber industry in the region did not begin until the completion of transcontinental railroads gave access to outside markets.

Species and their properties:

There are three distinct species of western pines. Two of these, the Idaho white pine and the sugar pine,

Lumbering in Idaho Starts 2nd Century

Along with the observance this year of "50 Years of Statehood" in Idaho, lumbermen are celebrating the centennial of the lumber industry. It was just 100 years ago, on April 1, 1840, that the first sawmill in what is now Idaho, cut through its first boards.

Situated on the banks of Lapwai creek, the first sawmill was operated by a water wheel which also ran the grinders of the first flour mill in this territory. Lapwai, now called Spalding, is 12 miles east of the confluence of the Snake and Clearwater rivers. The Lapwai of today is the site of old Fort Lapwai, three miles south of Spalding.

Erected by Indians, 1,200 of whom had dug the mill ditch with their bare hands, the mill was the brainchild of Rev. Henry Harmon Spalding, Presbyterian missionary to the Nez Perce Indians. With Rev. Spalding was William Gray, a mechanic and helper, and "a miserable looking man named Blair" who fashioned the water wheel of white pine and cedar.

The saw, known as a gig-saw, and which cut like a man-powered whip saw, came from Fort Vancouver where Dr. John McLoughlin had built a sawmill in 1827, the first west of St. Louis. It was obtained for Spalding by Dr. Marcus Whitman, transported by canoe from Vancouver to Walaitpu, Whitman's mission, and thence by horse-pack over the dim trails to Lapwai.

Site of the first sawmill is still visible in the Spalding memorial park near Lewiston, where an ornamental footbridge crosses the spillway of the old mill ditch.

From THE COUER d'ALENE (Idaho) PRESS, May 2, 1940.

NEW OFFICES TOP OFF 26 YEARS OF PROGRESS

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Designed and constructed 100% by our own organization, of our own wood products produced in our own shops, our new office and store building reflects the manner in which we have consistently throughout our 26 years in business kept our facilities up to the minute. With fine quality timber, modern manufacturing facilities and an experienced personnel ours is an organization to rely on for your postwar hardwood needs.

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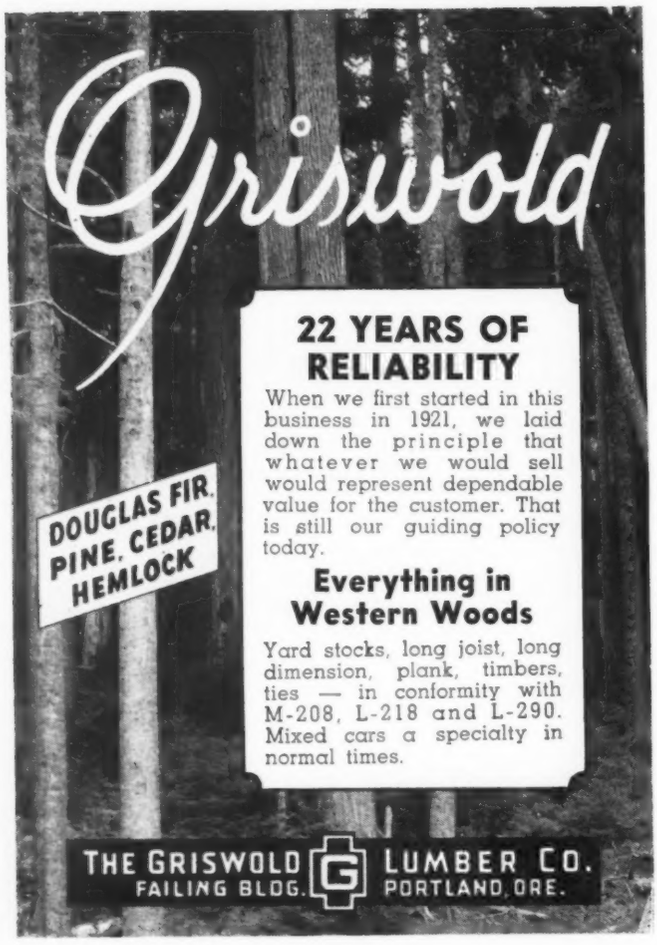
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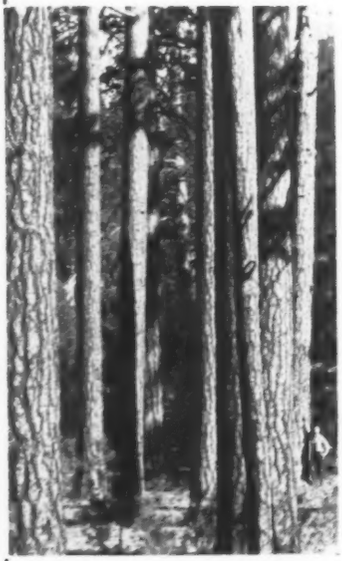

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Loyalton, California

are classified botanically as true white pine. The third western-pine species, ponderosa pine, while not botanically a white pine, is truly a "soft-textured" pine.

IDAHO WHITE PINE (Pinus monticola)

Idaho white pine is a true white pine found in the dense forest of Idaho and adjacent parts of Washington and Montana. The trees are straight and tall. Mature timber runs up to 3 to 5 feet in diameter, and often to 150 feet or more in height. Annual production is about 500 million board feet, and the reserve stand of timber, together with regrowth, assures an adequate supply for future years.

PONDEROSA PINE (Pinus ponderosa)

Of the commercially important species in North America, Ponderosa pine has about the widest geographic range. The total stand of this species is estimated at about 250 billion board feet, enough to produce 10 million carloads of surfaced lumber. This tremendous reservoir of virgin stumpage, if properly handled, is sufficient to provide material indefinitely at an annual production of about 3 billion board feet.

Mature Ponderosa pines from 3 to 5 feet in diameter and up to 200 feet in height are not uncommon. The large logs yield a good percentage of select lumber and of choice factory grades which have large clear cuttings between the occasional knots.

SUGAR PINE (Pinus lambertiana)

Sugar pine, another true white pine, is the largest of all the pines. Trees are commonly 4 to 7 feet thick, and occasional specimens reach a diameter of 12 feet and a height of 250 feet. The huge logs produce a high percentage of the upper or select grades.

This species is produced in California and southern Oregon. The normal annual production of sugar-pine lumber approximates 300 million board feet, and timber reserves will last a century at this rate, without taking into consideration the regrowth which is occurring.

Properties:

Because the various Western pines have so many properties in common, and because they are used interchangeably for many purposes the information as to their properties and uses is being lumped under a single heading.

The heart wood of all of the western pines is light in color, varying from creamy white to straw or pale reddish brown. Idaho white pine and sugar pine have very inconspicuous grain. Ponderosa pine shows a somewhat more abrupt transition from spring wood to summer wood, so that after machining, it presents a delicately figured grain. Even in ponderosa pine, however, the grain is much less evident than in many other softwoods.

The bulk of the lumber produced from the western pines is soft textured, with typically straight, close, and uniform grain. This accounts for its smoothness and for the ease with which it is worked by both hand and machine tools. The western pines are relatively light-weight woods.

The soft-textured pines and other woods of relatively low specific gravity do not have strength values as high as those of the harder, denser woods; but for most purposes for which the western pines are used, great strength is not a factor of importance. However, they are strong for their weight and are easily able to withstand the stresses to which they are usually subjected under actual conditions of use.

Western pines, because of their low density and

close, even grain nail easily and are less apt to split than are harder, denser woods. Large nails may be driven right up to the edge or end of a piece, and even the smallest moldings in house trim may be nailed quickly and securely.

Softness, uniformity of texture, straightness of grain, comparative freedom from resin, and lack of tendency to split or sliver, all contribute to this reputation for excellent wearing qualities. The western pines, in common with other light woods, shrink comparatively little. This quality (the ability to stay in place) is desirable in many construction uses, such as sash, doors, millwork, and trim. Modern seasoning methods, together with the natural properties of these soft pines, cut checking, splitting, and the like to a minimum.

Western pines provide good base for paints, enamels, and other finishes, and because of the light color of these woods, enamels and paints will cover with fewer coats than are needed to effectively cover woods of darker color.

On the basis of both laboratory and commercial experience, all three of the western pines are included with a group of woods which rank first in ease of gluing.

Woods like Ponderosa pine permit deep and uniform penetration of preservatives and fire-retardent compounds.

Uses of Western Pines:

The western pines are not recommended for heavy timbers, and other softwood uses requiring exceptionally high strength values per unit of dimension.

There are several purposes for which all of the western pines are used extensively and for which it is difficult to recommend any one of the three rather than the others. Idaho white pine and sugar pine, both being true white pines, command a somewhat higher price, grade for grade, than does Ponderosa pine. Ponderosa, on the other hand, with its annual production of about 3 billion board feet, is stocked by retail dealers in practically all parts of the country, under normal condtions. Idaho white pine is sold most extensively in the Middle West and in the East, where users frequently have a strong preference for white pine. The lower grades of sugar pine are sold mostly in California, but the Select Shop, and Thick No. 2 and better common grades are widely distributed.

Window sash and other woodwork are made in large quantities from Ponderosa and the other western pines. Both knotty and clear pines are used for paneling, and the knotty pines are even being used for furniture. They are widely used for exterior trim, cornices, siding, etc.

As industrial material these pines have gained a reputation as "specialty woods". Ordinarily, half of the Ponderosa pine and sugar pine and about a third of the Idaho white pine output is absorbed by industries. Practically all the wooden matches made in the U. S. are Idaho white pine. That industry takes an average of a dozen freight carloads of lumber each day. The largest use for the lower grades is boxes and crates. Sugar pine, Idaho white pine and Northern white pine are the only softwoods used in volume for foundry pattern making, a very exacting operation requiring close fits obtainable best with easy working material.

Outlook for the Future:

The condition of the forests of the various Western

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70 years of service is a record of which American Lumberman may well be proud. The standards it has fostered have benefited dealers, builders, home owners and producers.

70 years, too, have seen lumber production in the Western Pine region grow from about 400 million board feet to more than 6 billion feet annually. Behind this production is a huge supply of timber for the years ahead. Trees are growing. Forest lands are managed with increasing attention to sound forestry practices of protection and selective harvesting.

40 years have passed since it became the policy "to lay the foundation of our industry with the future." This policy is true today. Dealers may look with assurance to IDAHO WHITE PINE, PONDEROSA PINE and SUGAR PINE for their future lumber needs. *Western Pine Association, Yeon Bldg., Portland, 4, Ore.*

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WRITE TODAY FOR BULLETIN ON AVAILABLE SHAPES and SIZES
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"EVERYTHING FOR FARM BUILDINGS"

pines was somewhat indicated in the paragraphs under the various specie heads.

Following the building of the transcontinental railroads which gave access to outside markets, lumber production in the Western Pine region increased steadily until 1925, when for the first time it exceeded five billion board feet. Production has varied with economic conditions since then. In 1941 the output reached nearly six billion feet, a new level that was maintained for the year 1942. It now appears evident that an annual production of 4 to 6 billion feet, which is well within the sustained-yield possibilities of the region, may be considered normal. The production of Western Pines is about 85 per cent of the total output of the region, the balance being other species that are scattered throughout the area.

Douglas Fir Region

Origin and Development of Industry:

Historians agree that the first sawmill in the Pacific Northwest was erected by Dr. John McLoughlin of the Hudson Bay Co. at Post Vancouver, Wash., some time between 1824 and 1827. The first lumber was whip-sawed by hand, one man standing in a pit under the log and another sawer standing over the log working a cross cut saw. Within a year or two sawing machinery was brought around the Horn from England and a waterpower mill was set up. This mill was built by R. W. Crate, a millwright, connected with the Hudson Bay Co., who came overland to Vancouver in 1827. The mill consisted of one upright saw, cutting approximately 3,000 feet in twelve hours. In 1833 a cargo of lumber from this mill, consisting of about 50,000 feet, was exported to China.

Apparently the first sawmill in Oregon was erected by Ewing Young, a settler in the Willamette Valley at the point where Chehalem Creek empties into the Willamette River. This mill was in operation as early as 1837. About 1841 or '42 Dr. McLoughlin erected a frame sawmill at Oregon City. Other water driven mills soon arose at Milwaukee, Oswego and at Jefferson.

The California Gold Rush of 1849 established a new market for the young lumber industry of the Pacific Northwest. The younger men of the Willamette Valley joined the rush but those who remained behind, as well as the women and children, found "gold" closer at home. Demand for lumber became so great that vessel captains coming to Oregon City out-bid one another for the small supply of timbers, boards and shingles. The poorest lumber is reported to have brought $60 a thousand feet shipside and for good stuff mills were offered as much as $90 per thousand.

The first steam sawmill in the State of Washington was erected in 1853 at Seattle by Henry L. Yesler, who had arrived on the Sound during the preceding summer. At this time there were only a few sawmills in what is now the State of Washington but by 1850 thirty sawmills had been raised within the present territory of the State of Oregon and were cutting nearly $1,500,000 worth of lumber annually. During the '50's, San Francisco and other California communities grew with great rapidity and were a constant profitable market for lumber from the Pacific Northwest. That demand was largely responsible for the multiplication of mills in this territory. By the end of the decade thirty-two sawmills had been established

in Washington of which one was the first on Willapa Harbor and twenty-five were on Puget Sound.

Among the largest of the mills in the Valley was that of the Willamette Steam Mills Lumber & Mfg. Co. of Portland, which in the 1870's cut 150,000 feet of lumber a day, when a day was twelve hours long.

Among the first eastern lumbermen to enter business in Washington were Charles Foster, J. T. Keller, A. J. Pope and W. C. Talbot, of whom Pope and Talbot came first to the Coast, settling at San Francisco. In 1853 they sent two vessels to Puget Sound for the purpose of locating a site and by 1854 the first sawmill of the firm later known as Puget Mill Co. was in operation at Port Gamble under the management of J. T. Keller.

The Port Blakely Mill Company began with the erection of a sawmill in 1864 by William Renton, whose company became one of the largest timberland owners in the State and which in the '80's pioneered by building one of the earliest logging railroads in the Northwest. The first sawmill on Willapa Harbor is said to have been constructed on a site near the present city of South Bend in 1855.

In 1882, Captain Simpson, the lumber and shipping magnate of the day, sent George Emerson into the Grays Harbor country to establish a sawmill. Emerson selected a mill site where the Hoquiam River enters the broad Chehalis and the sawmill began cutting lumber in 1882. This mill produced 70,000 feet of lumber a day of 11½ hours. Wages for many years were $1 a day and board. There were many Chinese employees at the mill in those days as there were also at Knappton and at Ports Ludlow and Gamble.

As indicated the early mills on the West Coast were like the 17th and 18th Century mills of the East. The use of steam power made larger mills possible and by 1880 the largest were cutting up to 200,000 feet per day. Production was boosted still further by the coming of electric power about 1900.

After 1870 the development of the lumber industry on the West Coast was connected closely with railroad building. Prior to this some lumber had been shipped to the Hawaiian Islands, China and South America, but the principal demand was from local communities and California. Railroads first came to Oregon and that state developed earlier than Washington. In 1873 Portland and the Willamette Valley was connected by railroad with San Francisco and the California valleys. The Northern Pacific railroad was built to western Washington by 1884 and in 1893 the Great Northern reached Puget Sound. Lumber began to flow in ever increasing volume to the Middle West. The opening of the Panama Canal in 1915 was another important development for the Douglas fir region, but the war curtailed large scale inter-coastal movement of lumber until 1920.

Species, their properties and uses:

DOUGLAS FIR (*Pseudotsuga taxifolia*)

Reddish brown or yellow in color. It is hard, strong and stiff, equaling the strength of woods which are considerably heavier in weight. It has little tendency to warp or twist, good nail holding power, good durability. The log produces practically all heart wood. The outer growth of older trees is soft and easy to work. Douglas fir is particularly versatile. Its properties have caused it to be used widely in all parts of home building and for many industrial needs. Because the great tree size has permitted the production

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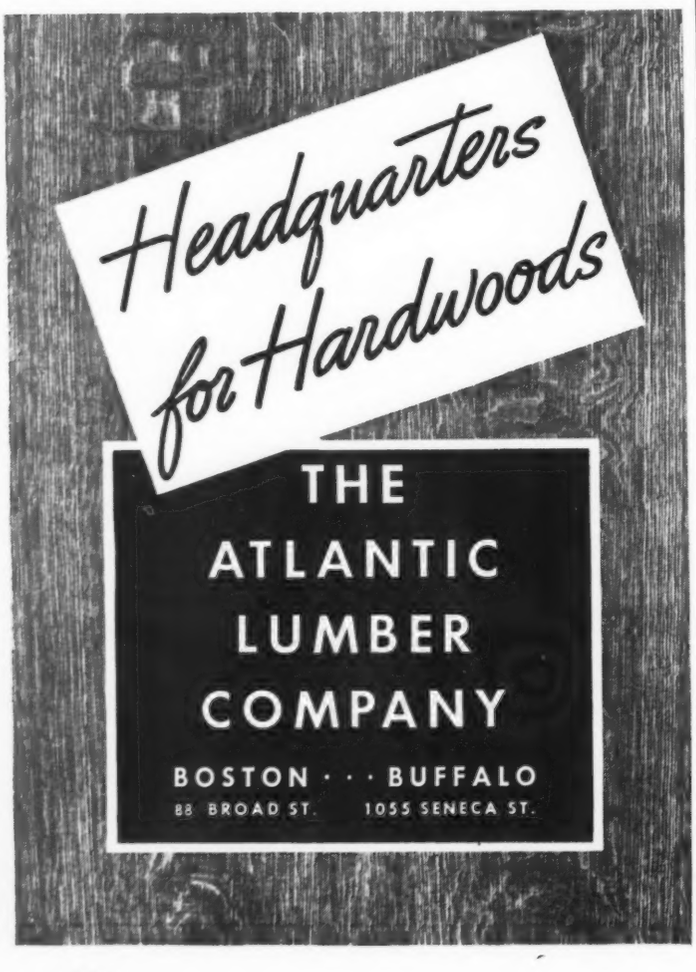


of timbers of tremendous dimensions Douglas Fir has found wide use in all types of heavy engineering construction, for marine use, for railroads, for farm buildings.

WEST COAST HEMLOCK (Tsuga heterophylla)

A softwood that is akin to hardwood in color, texture, aging and finishing qualities. It is somewhat stronger and stiffer than eastern varieties of hemlock. It is fairly durable when in contact with the soil. The trees do not prune themselves well and the lumber is inclined to be knotty but the knots are most often sound. It is one of the few woods that do not darken with age. West Coast Hemlock is distinguished for its uniformity of texture. The grain is straight and even and formed by long tough fibres which have a tendency to weld together under mechanical wear. The wood is paintable, pitchfree, a good nail holder and free from shake. It has no taste or odor when dry, and thus is well suited to the manufacture of food containers of all sorts. Also being used for all parts of house construction including flooring, woodwork and trim.

WESTERN RED CEDAR (Thuja plicata)

The wood is fairly strong and stiff, and because of an aromatic preservative oil within each cell it has high endurance qualities. It is also very free from expansion and contraction. It is of uniform cellular construction with large percentage of dead air space, and thus is a light weight wood of comparatively coarse texture. The ease with which it is worked is another characteristic. It has been used more than any other wood for shingle manufacture, and is also used extensively for siding. Its dull red brown color makes a good natural finish, and it also takes paint well. It has numerous marine uses, is used for outdoor planking and other conditions where humidity is high. It is a good fence post wood.

SITKA SPRUCE (Picea sitchensis)

Sitka Spruce trees grow to large size, are relatively free of limbs and therefore produce a high percentage of clear lumber. The wood varies in color but is usually pale brown with a faint tinge of red. Its chief quality is resiliency, the ability to take shock and bend and recover. It is noted for its ability to hold nails, glue and other fasteners. It does not split or splinter easily and is quite free from warping and twisting. Its lightness and toughness and resiliency have given it acceptance for airplane, truck and trailer manufacture. It has been widely used for ladders. It is uniformly resonant and easily worked and has become a favorite for piano sounding boards and organ pipes. Because it carries neither odor nor taste it is widely used in food refrigeration and container equipment.

REDWOOD (Sequoia Sempervirens)

California redwood is another of the few species of lumber which possess unusually high resistance to decay. It is one of the lightest softwoods commonly used for structural purposes, but has comparatively high strength properties—bending, crushing and hardness strength that is greater than would be expected from its specific gravity. It is subject to very little shrinkage or swelling under variable conditions of

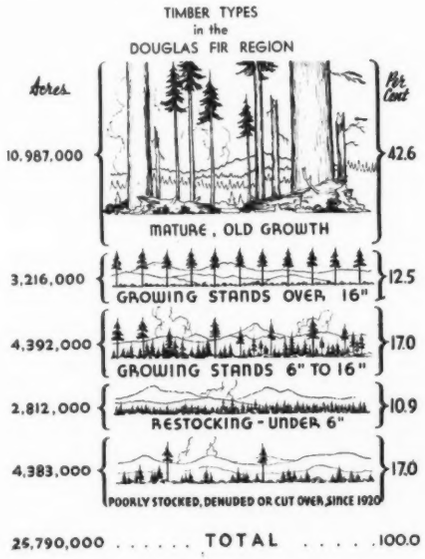
moisture. It holds nails well, glues satisfactorily.

The wood imparts no noticeable taste or odor to liquids or solids. It has a certain degree of natural resistance to fire. The boards lack luster, even on polished panels, but it has a sameness and richness of color implied by its name. Except curley specimens and burls, the wood may be said to have no figure.

One of the chief uses for redwood has been for vats for water storage or for chemicals. Silos, pipes, and siding and other outdoor construction such as bridges, culverts, guard rails, stadium seats have made large demands upon the wood. Some shingles are made of it and some railroad ties and paving blocks. Its qualities fit it for many uses.

Outlook for the Future:

There are 600 billion board feet of merchantable timber (trees over 16 inches in diameter) standing in western Washington and western Oregon. It is mature and, for the most part, the land it is on is producing no new growth. There are more than seven



Timber Growth and Depletion in the Douglas Fir Region of Oregon and Washington"

million acres of growing timber of less than 16 inches, to supply future needs. By cutting the mature and over-mature trees growth of the younger stuff will increase rapidly.

If the Douglas Fir forest lands are cut and protected as they are at present the forests should produce about 10 billion feet per year forever. Potentially, with a maximum degree of forest management and fire protection they could produce 14.5 billion board feet annually on a sustained yield basis. This is almost double the 1940 forest drain.

Publicly owned forests make up about half the total of standing timber in the area and they can exert a constructive influence toward sustained yield of timber growth. The section still has large quantities of virgin timber.

To the following organizations the AMERICAN LUMBERMAN expresses appreciation for assistance in preparing this lumber specie guide: Northeastern Lumber Manufacturers Assn.; Northern Hemlock and Hardwood Manufacturers Assn.; Southern Hardwood Producers, Inc.; Southern Pine Assn.; Southern Cypress Manufacturers Assn.; Western Pine Assn.; West Coast Lumbermen's Assn.; and California Redwood Assn. Stress tables from the "Wood Handbook" of the Forest Products Laboratory.

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HOO-HOO
the Black Cat Struts

By B. F. Springer, Secretary,
International Concatenated Order of Hoo-Hoo

Throughout the lumber world, the name Hoo-Hoo is known. Its true meaning and significance, however, are still veiled in mystery to the uninitiated. Some there are who still raise an eyebrow upon the mention of Hoo-Hoo.

There is no mystery about Hoo-Hoo. Basically, it is a great fraternal order of members active in some phase of the lumber industry. It probably is the first purely industrial fraternity. If mystery there be, then it is only the window-dressing for the deeply significant objectives, code of ethics, and activities. That these latter are real and sterling is attested to by the fact that Hoo-Hoo, born in 1892, is now in its 52nd year. Like the industry which it represents, it has its trials, but truth will prevail, and fundamentals will survive. Up to the time of the reorganization of Hoo-Hoo in 1932, 3100 Concatenations (initiations) were held, and over 45,000 members were enrolled in the Order. Since the reorganization, 80 Concatenations have been held. The records reveal that to date 46,464 members have been initiated.

The birth and the beginning of this organization has been told many times before. The accidental gathering of Messrs Bolling Arthur Johnson, AMERICAN LUMBERMAN staff, William Eddy Barns, lumber press representative; George K. Smith, lumber association secretary; William Starr Mitchell, daily newspaper man; George Schwartz, railroad man; and Ludolph Adalbert Strauss, lumber manufacturer —at Gurdon, Arkansas, January 21, 1892 created the situation which kindled the spark to establish a "great fraternity in the Land of Lumber," with the one great aim of fostering a fraternal spirit to help build up in the world the Health, the Happiness, and the Long Life of the Membership, and of developing Friendship, Confidence, and Education among its members.

Today, in Gurdon, Arkansas, stands a Hoo-Hoo monument commemorating the birthplace of the Order. Floodlights around it are maintained by the Gurdon Board of Trade. Highway markers inform tourists that they are about to enter the town in which the Hoo-Hoo lumber fraternity originated. The Gurdon cinema adopted the name "Hoo-Hoo Theatre," and only recently the Missouri Pacific Railway has constructed an artificial lake at Gurdon, to be known as "Lake Hoo-Hoo."

Don S. Montgomery, Snark of the Universe

The Golden Jubilee of Hoo-Hoo, was celebrated in October, 1941 at the 50th annual meeting held in Hot Springs, Arkansas, and was highlighted by a pilgrimage to Gurdon. Throughout its life, the keynote, the developing of Friendship, Confidence, and Education through fraternalism, has served as the basic guide for Hoo-Hoo activity. With growth came the cooperation with all factors in the industry in the support of wood promotion programs, the study of wood and

its uses, of conservation and reforestation. Then in the early 1930's Hoo-Hoo felt the effect of the general depression. It emerged from its dormancy and in 1940 held its 49th Annual Meeting in Chicago. Reorganized, it looked forward to a new life of activity and service to the industry.

At the 1940 Chicago meeting, representatives from the north, east, south and west were unanimous in their belief and expressions that the fine old fraternity had started a "come-back", that there is a place and need for its friendships and fraternal spirit in the lumber industry, that there is an underlying loyalty among old Cats for the Order, and that there is a large number of young lumbermen who want the benefits of fraternal contact with older members of the industry. For that same year, it was reported that "Hoo-Hoo is moving forward with energy befitting the character of the Great Black Cat. Everywhere Hoo-Hoo meetings are being held. Old Cats are reinstating and Kittens are tasting the milk. Time cannot destroy the ideals of Hoo-Hoo."

Today Hoo-Hoo is headed by a Board of Councillors of three members as part of the executive and administrative personnel of the Order. The Supreme Snark of the Universe heads the Supreme Nine, composing the Board of Directors. Each member of the Supreme Nine is head of one of the nine districts into which the United States, Canada, and all other countries are divided.

The membership of Hoo-Hoo is limited to lumbermen, that is, those who are engaged in the manufacture or sale at wholesale or retail, of raw forest products, lumber, logs, laths, shingles, ties, posts, pilings, poles, staves, heading, boxes, sash, doors, and millwork; (either owners, officers or managers of departments and salesmanagers, or salesmen); and in addition, foresters, officers of lumber associations, and representatives of the lumber trade press.

Today great emphasis is laid on the purely fraternal, the fostering of friendship and understanding among men, in the belief that success in the industry depends upon mutual trust and understanding, and is the first step toward the solution of problems which confront our industry. Today the primary function of this national organization is to foster cooperation between the manufacturers and distributors for the promotion of

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lumber and lumber products, by supplementing the trade promotion work of all lumber associations. The national office is set up to answer lumber questions and to solve lumber problems submitted by Hoo-Hoo members. The national and regional setup of the organization has served to establish public friendship and confidence in the industry and its products, because of its widespread officership and chain of local clubs. Through its constructive civic work, Hoo-Hoo has established close contact with the public and the press. Its unique name and traditions, and splendid ethics have won the interest of the public. There is no suggestion of commercial selfishness, and this fact has made it possible to get public attention where other organizations have failed. It has been aptly said, "We have in this organization, which is the soul of lumber, the thing which will solve our problems, as it gives to us the fuel that comes out of human hearts, that helps men to understand one another and to work together."

Hoo-Hoo Monument at Gurdon, Ark.

Activities of Hoo-Hoo are broad and varied. Hoo-Hoo has gone on record to further the program of the American Forest Products Institute. It has aided in the distribution of such pamphlets as "Facts About Our Forests and the Lumber Industry", and "Behind the Eagle Stands the Forests." The challenge of needed attention in distribution as well as production problems of the industry, has been met by incorporating as a basic program, specific cooperation with colleges and universities to install building industry courses. An Educational Committee is a standing Commitee in Hoo-Hoo. This Committee is headed by Past Snark Arthur A. Hood, who has appointed the following to serve with him: W. H. O'Brien, E. P. Hoener, C. R. French, Kenneth Smith, Ray Saberson, Findley Torrence, W. E. Difford, and Don Critchfield. As a result of this activity, eleven colleges and universities have installed building industry distribution courses, under the administration of either the forestry department, or engineering or business departments.

Of present day activities of Hoo-Hoo, a program of work adopted by the Wood Promotion Committee of the Spokane Club, is typical. This program includes the following: (1) A survey of the field for available literature on wood uses. (2) Publication of a facts pamphlet setting forth the importance of wood products industries to Spokane and the Inland Empire, the possible uses of wood, and reasons why wood should be given preference to other materials. (3) Establishment of a permanent clearing house within Hoo-Hoo for the supplying of educational and informative material, both to the public and to the industry. (4) Secure a continuous flow of newspaper and radio publicity. (5) Development of a school program for the education of future users of wood. (6) Establishment of an exhibit in a downtown location. (7) Develop plans for securing cooperation of architects and contractors in advancing the use of wood. (8) Follow-up of leads where it appears proposed construction could be of wood instead of other material, especially in public construction.

Hoo-Hoo is meeting the challenge of the all-out war effort. In cooperation with lumber associations through its regional and district clubs, it is bringing to its members interpretation of the various Government rules and regulations incident to the war. Subjects designed to give members a better understanding of national war problems are discussed at club meetings.

Hoo-Hoo is justly proud of its record of servicemen in the present World War. Eighty members have been reported to the Secretary as active in some branch of the armed forces. There are many more, and in addition, all members of Hoo-Hoo, as members of the lumber industry, are contributing individually and collectively to the war effort.

With the multiplicity of new and ever changing problems that confront the industry, Hoo-Hoo recognizes its opportunity to serve the industry. It is indeed the common meeting ground for all factors in the industry. Its principles, its Code of Ethics, its Life Long program, all point to Hoo-Hoo as the great coordinator and cooperator in helping solve the post war problems.

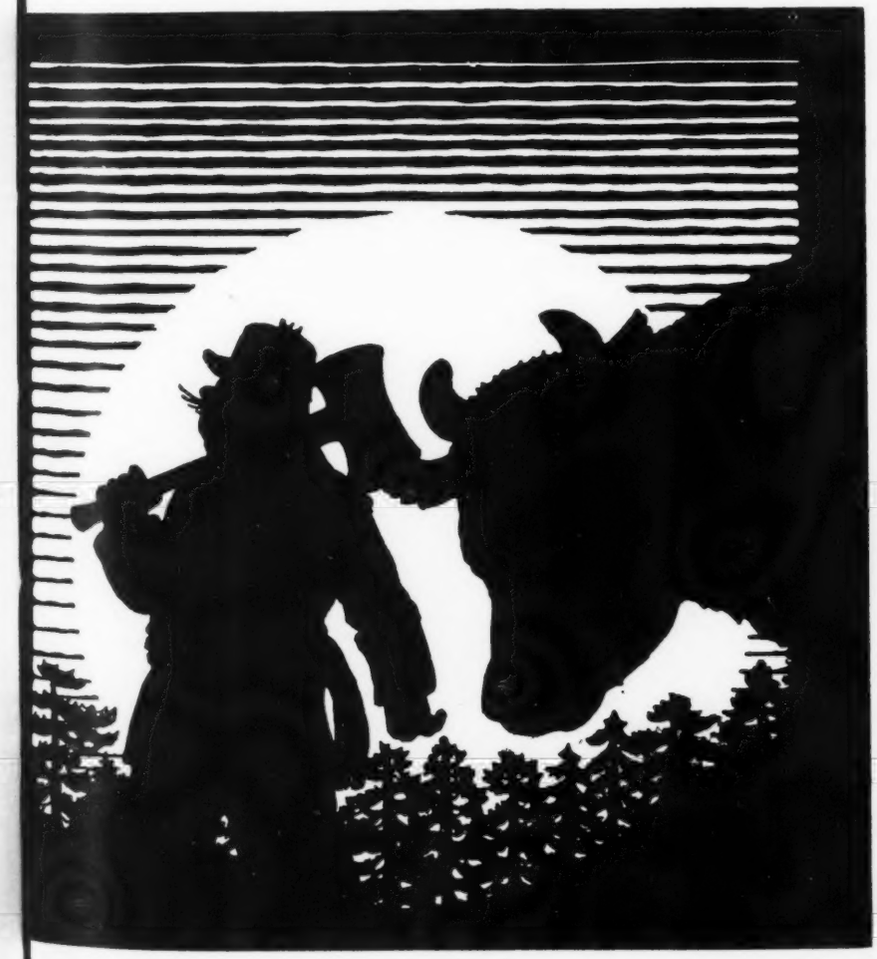
The Only True Story in This Here Book

(*Continued from page* 132)

gives you an idea of what really happened. There must be a few good histories left with the whole story in it, case you're interested.

Now, as to all those other things in this 700th Anniversary issue, which it rightly is, I aint saying they're exactly lies. That aint fair. The people who wrote them done the best they could with what they got to work with. Thing is they don't know much about what's going on or where. I can't tell all I know, but I can say a few things, which rightly should be said, and said here. Most people never stop to figure where Paul Bunyan went when he got tired of logging around here. Truth is, Paul had some ideas about trees and lumber, too. So he went off to see about trees, and when fellows like Cap Winslow and some more get their minds made up to what they are going to do with logs and lumber, Paul is aiming to come back by way of—well it ain't fair for me to say. Anyway, he is aiming to come back and tell about his new forest with more trees in it than was ever grown on this here planet, and the smallest of them being four times as big as the biggest Redwood in California. This Dr. Brown, he probably don't know about that with them statistics about merchantable timber, which I bet Paul is laughing hard about. These new trees, too, is having grown right in them all the toxic and waterproof treatments these chemical boys is talking about. Funny they take up so much time and money pushing that stuff into wood when it's only a matter of a few years till Paul will show them how to grow the stuff into the trees themselves.

Can't tell you how he's growing flexible trees, and plywood trees and arched trees, but that will all be a matter of history in any good history book in a few years. And these here Teco Connectors are alright till Paul gits back here with his new welding compound for wood. Shouldn't maybe tell you even this right now, but, shucks, we ain't seen nothing in wood use yet. No, nor in paint, hardware, insulation, asphalt and asbestos products, glass, and holy Harry knows what not. And I can tell you, knowing what I do about things, that the AMERICAN LUMBERMAN itself is on its way to things the publication business aint even dreamed about yet.



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Trade Associations

(*Continued from page* 199)

tion of commodities handled by the retailer; and to act as spokesman in all national legislation affecting the retail lumber industry. The governing body of the association consists of the secretary and one dealer member of each association affiliated with the national organization. Additional dealer members are permitted up to a limit of one for every 300 members of the affiliated associations.

The National-American Wholesale Lumber Association, with headquarters in New York City, under the direction of Sid L. Darling, was organized in 1892. Its present setup was consummated by the merger of the American Wholesale Lumber Association and the National Wholesale Lumber Dealers' Association in 1923.

The National Association of Commission Lumber Salesmen, with headquarters in Kalamazoo, Mich., under the direction of Hubert L. North, the incumbent secretary-manager, is the youngest of the national associations; it was formed in 1922 and was reorganized in 1933. A rigid code of ethics has been adopted and the association uses "The Dependable Medium Between Buyer and Seller," as its emblem indicates.

In 1917 the AMERICAN LUMBERMAN, as the chief exponent of lumber associations, conducted a questionnaire among lumber organizations, in an attempt to answer many statistical questions which had arisen in the minds of lumbermen and to stimulate interest in the association movement. This survey covered associations of manufacturers, retailers, salesmen, and wholesalers, as well as two sash and door associations, four logging bodies, two shingle associations, two forest protective organizations, and clubs and exchanges. At that time there were twenty-seven associations of manufacturers, with a total membership of 2,315. In point of numbers, the associations of retail lumber dealers represented (and still do) the largest organized element in the lumber trade. In nature, these retail associations varied all the way from the club covering a small district to the large association reporting over several States. In 1917, twenty-eight retail associations showed a total membership of 8,601, the largest having 1,500 members. Seven salesmen's associations reported a total membership of 1,327, with the Mississippi Valley Lumber & Sash & Door Traveling Salesmen's Association, the oldest, having been organized in 1890. Six wholesale associations reported a membership of 575. Two sash and door associations reported a membership of 95; four logging bodies reported 459 members, and four shingle associations had a membership of 107.

Today the AMERICAN LUMBERMAN records show thirty associations of manufacturers; fifty-nine organizations of retailers, the majority of which have been in existence almost fifty years; eighteen wholesale associations; sixteen salesmen's associations, and numerous local clubs and exchanges. The membership of all the associations serving the various branches of the industry is the highest in lumber association history, in spite of fewer new ventures being undertaken and many older businesses either going out of business or closing for the duration.

As an example of its loyalty to the association effort, the AMERICAN LUMBERMAN in its issue of January 26, 1924, covered twenty-five conventions with its own editors and staff correspondents and thinks this is a record in any industry. In the next issue (Feb. 2), AMERICAN LUMBERMAN representatives reported fifteen annual meetings of lumbermen.

Changes in the lumber industry are constantly challenging the best minds of its members. Although lumber trade associations are trees of sturdy growth, they also undergo constant changes, just as methods of business change when new legislation is enacted which affects them and new ideas are tried out. Perhaps the most radical innovation in lumber association setup in recent years is the intrusion of women into the official ranks—which was not brought about by the war exigency. To the Florida Lumber & Millwork Association goes the distinction of being the first lumber trade organization to employ a woman secretary—Mrs. Marie Bennett, who has been serving its members ably since September 1938. Last December the Mississippi Retail Lumber Dealers' Association engaged Mrs. Margaret Ballou to look after its affairs. The Kentucky Retail Lumber Dealers' Association have also at present a young woman to administer their work—Miss Helen Brinton; she is taking the place of the regular secretary,

Don A. Campbell, who is on leave of absence to serve as chief of lumber distribution section of the War Production Board. The Birmingham Building Material Exchange is under the guidance of Miss Mildred Caine, who is acting secretary for the duration of the present world-wide conflict.

When an entire industry works cooperatively through associations and girds for the fight to obliterate false notions of the public which are detrimental to the welfare of the industry, enormous results follow. It seems that in times of trouble, disaster, or conflict, more than ever, men realize the value of associated effort, for at such times an added impetus is given to them because individuals realize the expediency of organized effort. An association is a laboratory; "it represents the synchronized thought of the best thinkers—forward looking men with a vision broad enough to consider their businesses in the form of an industry instead of as a single institution with which they have directly to do." Individuals are able to aid the government and protect their own interests at the same time only through co-operative effort, and national associations are constantly on the alert to guard the rights and privileges of their respective constituents. Membership in an association seems to carry with it a guarantee of reliable service and financial obligation, and adds prestige to the business represented. By associations imposing sufficiently severe restrictions upon applicants for membership and requiring their members to live up to their contracts, their united efforts gain public confidence for an entire industry.

Trade associations justify their existence through service to the industry they represent and to the public. Only through organizations can the greatest benefits of cooperation between manufacturers and distributors be secured for the general lumber trade and for the public they serve. No trade organization could have successfully maintained itself for thirty, forty, fifty or more years, as many lumber organizations have done, unless it rendered a useful service to the industry which it represents and to the consuming public.

One of the outstanding services the associations are at present rendering to their members is the interpretation in bulletin form, of the various rules and regulations imposed by the Government as wartime measures. The list of accomplishments is too long to enumerate in a resume of this kind. However, a few should be mentioned. Grading of lumber was fostered by the associations from the time the subject was proposed. One of the first active moves to grade lumber was made in 1890 by J. S. Funk and A. A. Fiero, a committee appointed by the trustees of the Northwestern Lumber Manufacturers' Association to inspect grades of white pine lumber that were being made by the various manufacturers in the Mississippi Valley and in the Wisconsin River Valley. The committee was appointed to settle controversies between members of the industry regarding the value of lumber. This investigation resulted in the adoption of uniform rules for the grading of white pine.

Lumber trade associations have been particularly valuable in the standardization of lumber. Associations have also largely handled the traffic interests of their members and have been the media through which various forms of statistical and other necessary information have been assembled and distributed. Conservation and reforestation are important milestones in the co-operative effort, as well as education in ethical distribution. Research and trade promotion have played immense parts in the welfare of the industry. The Merchandising Institute of the National Retail Lumber Dealers' Association inaugurated in 1936, is a sales building program for lumber and building material dealers and consists of a complete study course in ethical distribution.

The success of individual businesses turns in part upon the success of the industry and upon what the industry as a whole does to and for the public. Most lumbermen understand the advantages of competing for their individual advancement under the highest ethical rules of their associations and co-operating for the common good of themselves and the general public.

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Commission Lumber Salesmen

By Hubert L. North, Secretary Manager
National Association of Commission Lumber Salesmen

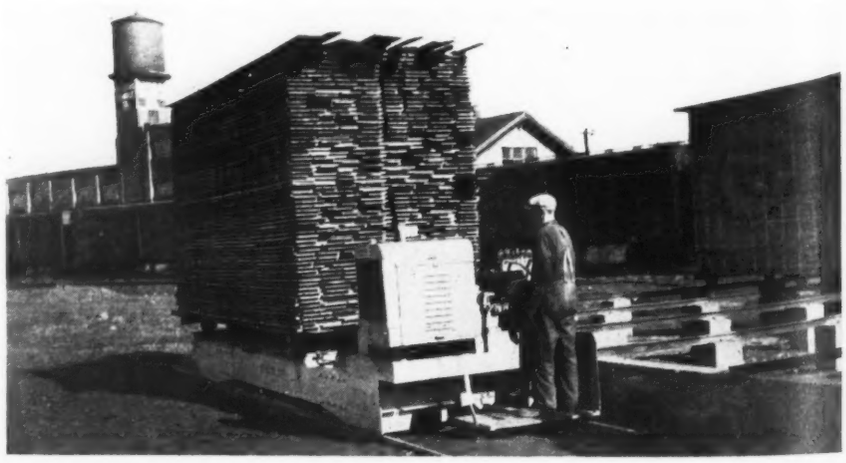
There are many emergency factors stemming from wartime dislocation of supply and demand that affect the distribution of lumber today. Since Pearl Harbor the manufacturers scarcely have been able to supply the enormous needs of the war effort. They have had little stock to offer through the normal channels of trade and consumption. War requirements properly have come first.

The manufacturers really have performed a herculean task, considering the perhaps necessary handicaps of many controls placed over every phase of their business. All manufacturers have found it necessary to give the Central Procurement Agency first call on their production. Some manufacturers, pinched between rising costs and ceiling prices, are selling direct to private industries with war contracts and high priorities.

Though not accorded equal advantage for fair competition with the Central Procuring Agency, the rank and file of commission lumber salesmen are patriotically in step with the war effort. They are assigning the material they find available to the highest priorities on hand.

Most private enterprise prefers purchasing through qualified sales representatives. Industries appreciate the contacts with and personal services of representatives, their knowledge of various species of wood, grades best suited to various uses, and dependable sources of supply. Purchasing agents know such commission lumber salesmen, and that they have proved their interest in maintaining the good will of the buyer, as well as the source of supply. Private enterprise knows the risk of added costs and waste in the purchasing of lumber thrown on the auction block.

With increasing predictions of cessation of war on the European front within the year, and more general agreement that the end will come in this theatre by the spring of 1944, we should keep a weather eye open on the volume trend of procurement for Government agencies. There will always be the possibilities of huge cancellations of lumber orders on file, and the necessary disposition of inventories on hand when war orders are slowed down or stopped. I am not predicting when these factors will enter the picture, but they will be with us some day. It is necessary that the lumber industry emerge from the war with all of its branches intact, for immediate pursuance of good peacetime building prospects. It is to be hoped that when the war is over the government will unwind the red tape, and remove the restrictions placed on the lumber industry to permit operation along the lines of practical economy.



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